JUNE, 1943 No. 6

CHEMICAL INDUSTRIES

The Chemical Business Magazine

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CHEMICAL INDUSTRIES

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BETWEEN THE LINES

Lignite an Important Chemical Reserve

Reportedly producing well over half of its electric power, sulfuric acid, coal tar distillates, gasoline, fuel oil and synthetic rubber from lignite, Germany appears literally to be maintaining her war machine on this raw material. Known U. S. deposits of lignite outweigh those of Germany by several times. Chief deterrent to their use so far has been economic.

GROWING pressure on the chemical raw material resources of the country serves to draw attention to possibilities for less exploited or less intensively developed materials. Lignite coal is currently the center of a controversy between its advocates and others, as to whether its potentialities are fully realized in the United States.

In such discussions the degree to which Germany has utilized lignite deposits at home, and in the countries overrun by German forces, to maintain its war machine is frequently referred to in comparison with the degree of use by this country of its lignite resources. Germany is reported to obtain 75 per cent of its electric power for war production, at least 80 per cent of sulfuric acid requirements, coal tar distillates and other chemicals used in explosives and other war production, from lignite; in addition it is reported to get 80 per cent of its synthetic gasoline and diesel oil, besides basic materials for synthetic rubber, from this raw material.

German Production

German lignite production is reported to have increased 80 per cent during the period 1933 to 1937, attaining 189,700,000 tons in the latter year. Using lignite fuel, it is further reported, 33,000 German electric plants produced 48,909,000,000 kw. of electric power in that year.

From the same raw material in 1933 Germany was said to have obtained 1,206,000 tons of sulfuric acid, 293,000 tons of benzene, and 208,000 tons of coal-tar distillates, for manufacture of phenols, cresols, toluene, explosives, and dyestuffs. By 1937 that country was stated to be getting 2,050,000 tons of sulfuric acid, while coal tar distillates for explosives manufacture had been increased 125 per cent. Lignite, from these figures, played a tremendous part in the four-year period during which Hitler prepared Germany for the present war.

What Germany has done since, and down to 1942, has to be largely estimated. Authoritative sources place German production of lignite at 250,000,000 tons, including that of subjugated areas. From this production 50,000 electric plants are said to generate 100,000,000 kw. Sulfuric acid is placed at 5,000,000 tons; coal tar bases and acids for picric acid and TNT, 1,500,000 tons, all from lignite. No figures are given for lignite-derived synthetic rubber, diesel oil, or petrol. However, since Germany has no natural petroleum reserves it is believed that a substantial part of fuel and rubber production must depend on coal derivatives.

The point made in stressing German lignite utilization for war, is that more than 90 per cent of the world's deposits is believed to be located on this side of the water, predominantly in Canada and the United States. Instead of an estimated 60,000,000,000 tons available to Germany, including areas under German control, ten times this quantity of lignite is believed to be stored in North Dakota alone. Other deposits are located in South Dakota, Wyoming Montana, Texas, and the Gulf states.

However, United States production has risen from about 800,000 tons at the close of World War I, when it was virtually all used for local fuel or heating, to an average per year of 3,000,000 tons during 1939, 1940, and 1941, approximating Canadian and Australian lignite output, and of which American production 51 per cent is now used for electric power.

U. S. Supply Superior

Not only does this country have a much greater lignite supply, but it is considered by some authorities to be superior to the European variety. Moreover, the United States Bureau of Mines is credited with having worked out improvements on the two German hydrogenation processes used for converting lignite. Since about 100 chemical products are listed as potential or actual derivatives of this coal—tar acids and bases, neutral oils, motor oils, cresols, phenols, light and heavy naphthas, toluene and benzene—the possession of such huge reserves as the Dakota deposits indicate would seem to give the United States a powerful backstop in chemical resources.

The Bureau of Mines reports on lignite deposits in the United States:

"The lowest rank coals in this country are lignite and sub-bituminous coal; they comprise 50 per cent of the national coal reserves, and many of these deposits can be mined cheaply by stripping methods. Unfortunately, they yield much less oil per ton of coal mined than do coals of bituminous rank.

"The yields of tar acids and tar bases are about 10 times those obtained in coal carbonization. The tar acids, phenol, cresols, xylenols, are of commercial value as raw materials for organic chemical processes. The bulk of oils obtained in the coal assay is aromatic in nature and could be utilized as solvents and as raw materials for the production of benzene and toluene for explosives manufacture.

"The possibilities of coal hydrogenation as a source of organic chemicals are apparent, and the demand for such chemicals is large, particularly in the rapidly growing plastics industry. The average selling price of these raw materials should be about 20 cents per gallon, or about 2 cents per pound. The cost of production should be lower than that of gasoline because the second stage of hydrogenation is not needed. . . . ."

Hydrogenation Pilot Plant

The U. S. Bureau of Mines has erected an experimental coal-hydrogenation plant, having a capacity of about 100 pounds of coal, producing about 8 gallons of gasoline per 24 hours, which was designed primarily to study hydrogenation of coals from the more important beds of the country. Some fourteen have been assayed. A number of coal beds have been selected on the basis of such experiment as suitable for hydrogenation. Experiments show 63 to 65 gallons of gasoline per ton of lignite coal as mined, from two North Dakota mines.

In reference to what Germany has done or is doing in this field, including the fact that the two fundamental hydrogenation processes are of German origin, it should be borne in mind that there is a fundamental difference in the situations of the United States and Germany. The United States has vast petroleum resources and many other raw material sources lacking in Germany. Quite apart from any ingenuity displayed by German technicians in devising synthetics, the plain fact is that Germany must have synthetic replacements for some materials, rubber for instance, or none; we do not know exactly what Germany is doing about airplane and tank fuels, but obviously the German

(*Turn to page 760*)

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When our fighting men pull the trigger, they depend on a steady fire. Their weapons and ammunition are the best in the world. When brass for cartridge cases is drawn and heat treated, a scale is formed which must be removed before the next operation. The most effective and economical cleaning agent for this purpose is a solution of sodium bichromate and sulfuric acid. Such Bichromate solutions have been used extensively in the manufacture of brass products for many years. Mutual Bichromates meet all specifications and are widely used by our Government and throughout industry. Shipments are made from either of our complete plants or dealers' warehouses.

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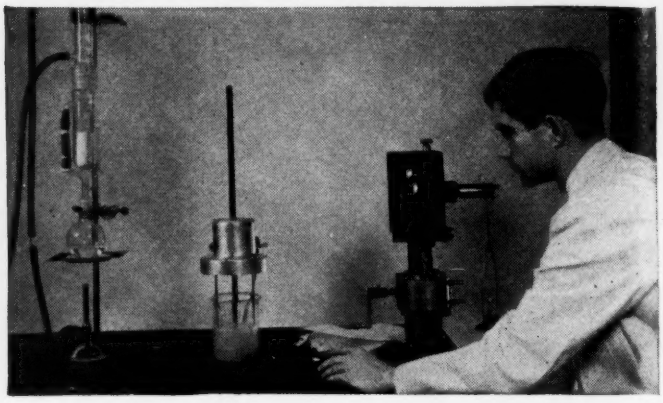
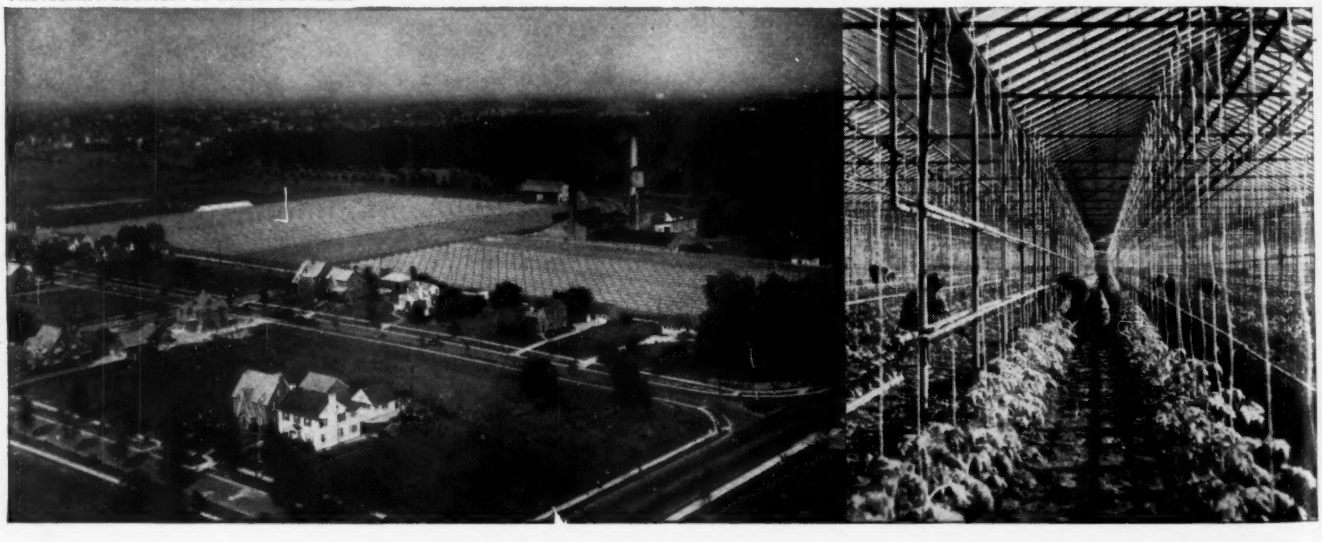


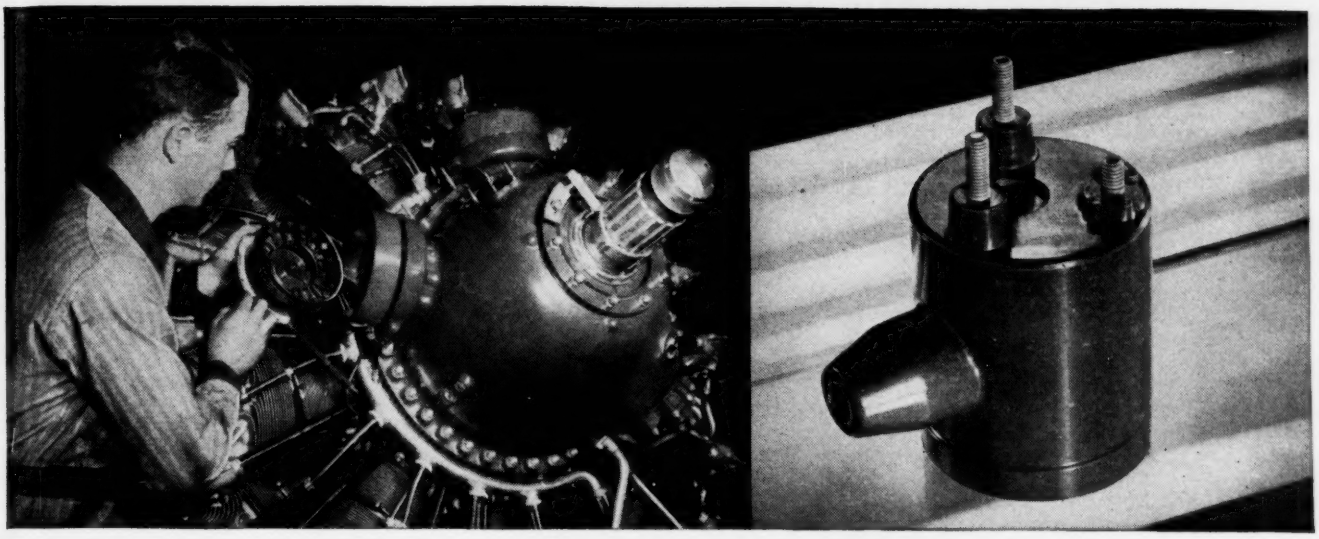
(*Left*) **THANKS TO FIELD TELEPHONES,** reconnaissance units and field headquarters can quickly communicate on enemy movements and emplacements, thereby effecting the most efficient possible disposition of men and equipment. Your $18.75 purchase of a War Bond will provide the funds for a complete field telephone unit. Do your part to finance production of this and other vitally needed equipment by buying *more* War Bonds or Stamps *regularly*. Every American has the opportunity—and privilege—of aiding the cause of Victory by making every payday Bond Day. The Payroll Savings Plan of the Treasury Department provides a convenient means of doing this.

(*Below*) **VEGETABLES REPLACE FLOWERS** as more and more greenhouses are converted to vegetable growing so that America's Victory Gardens will have an ample supply of sturdy young plants. Typical of such greenhouses is that shown here, one of the largest in the country devoted to the growing of vegetables under glass. In raising vegetables like tomatoes, extreme care must be taken to prevent infestation by such insects as the White Fly. Leading greenhouse operators throughout the country have found that infestation by this pest, as well as others, can be completely and economically controlled through the regular use of CYANOGAS* G-Fumigant—one of the many products developed by Cyanamid to efficiently combat insects and rodents.

PHOTOGRAPH COURTESY OF WRIGHT BROTHERS



CHEMICAL NEWSFRONT



(*Above*) **TREMENDOUS FLYING POWER** is developed in 18-cylinder radial engines like this. To provide dielectric strength, high arc resistance and heat resistance, such parts as distributor and booster coil housings are now being molded out of MELMAC*—Cyanamid's melamine-formaldehyde thermo-setting plastic.

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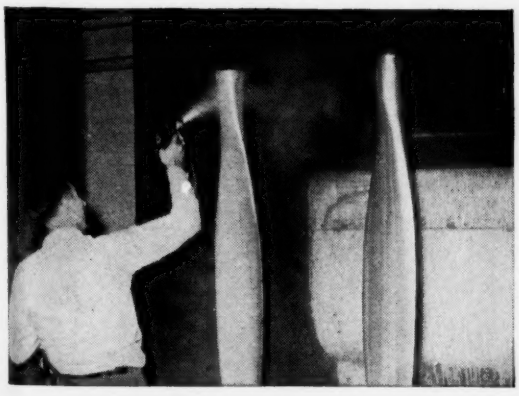

(*Above*) **TO "TOUGHEN UP" WAR EQUIPMENT,** many metal parts are case hardened and carburized with Cyanamid's AEROCARB* and AEROCASE* two-component liquid bath materials. Pioneered by Cyanamid, the two-component principle provides the ease of control and chemical stability necessary under the difficult conditions encountered today where deeper cases, longer-time cycles and smaller drag-out losses are required. Cyanamid's case hardening and liquid carburizing compounds represent the developments of over twenty years of laboratory investigation and industrial operation.

*Reg. U. S. Pat. Off.

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WASHINGTON

By T. N. Sandifer

Some Post-War Considerations

POST-WAR planning of the more publicized kind, around this chronically muddled city, can be largely written off as academic.

There is an incipient revolt against much of it, which may flare more strongly. It has already reached the point of attempts in Congress to abolish the National Resources Planning Board, the source of some of the more widely suspect ideas in the field.

One proposal from this agency, for joint government-private management of some facilities in the post-war period, fell particularly flat. Nevertheless it has served to point up one of the more pressing post-war problems, coming nearer for solution each day—the disposal of excess plant capacity.

T. N. Sandifer

Expansion of facilities, so far as this war is involved, appears now to be a thing of the past—whether of aviation or alcohol, rubber, explosives or other munitions. The plants now in operation or definitely scheduled for completion appear to be the ones that the nation will finish out the war with, and will have to decide what it will do with afterward.

The government has a substantial interest in a considerable number of these plants. It has financed entirely many new alcohol producing units, and those for synthetic rubber, to mention two. Approximately 50 to 90 per cent of aluminum and magnesium production capacity today represents Federal investment.

Apart from the more theoretical approach to the problem, Army, Navy, Commerce and other departments already are giving attention to ways of disposing of government war plants. The trend of this thinking now is that some centralized agency should be named or created for over-all administration of the liquidation process. The alternative would be to permit each department to make its own policy and its own plan regarding the facilities it had set up in the war.

Too Late for What?

Meanwhile the disposition is to go slow on all but vital expansions. The rubber program, as an instance, is now being held at about 79 per cent of the original recommendations of the Baruch report. Rubber Director Jeffers, in explaining the cancellation of eight refinery conversion projects for butadiene, said their completion would be "too late," which raises an interesting question: "Too late for what—the war?" It is also becoming increasingly likely that a part of the beverage alcohol distilling facilities may be released for a time, from ethyl alcohol production.

While War Production Board, like most other government agencies, is reluctant to concede that a large part of its major job is done, this appears to be the case. There is an increasing tendency to leave in the hands of the industries concerned, many of the problems connected with production.

The recent emphasis on cut-backs in production facilities, and in some cases production itself, has led to widespread fears of an upset in labor, with unemployment, migration, and other attendant effects. The expectation among labor experts in the government now is that labor displaced by these changes will be quickly absorbed in other production which must still be kept at full blast. The shortage is still acute.

Post-War Markets

How much of America's war-stimulated production can be utilized after the war is now the subject of study. Some forecasts, particularly in relation to aluminum and magnesium, are encouraging. The future foreign trade policies and trade relationships of the United States will be an important factor in this connection.

While the United States will have exportable surlpuses of some commodities it formerly did not have, and has made itself independent of outside supplies in others for normal requirements, this also is true of many countries overseas. This is especially true in many chemical materials, of both the United States and countries abroad.

Some elements of the present Administration have had a share in promoting this situation in some of the potential foreign post war markets for American goods, including chemicals. As set forth in a preceding issue, one United States agency is developing at home a vast and efficient synthetic rubber industry, while another is actively building in Latin America a potential natural rubber competition. The area being set to rubber in the Amazon basin is as large as the whole United States. Conceivably American requirements and possibly those of other countries will justify this supply of natural and synthetic rubber. If not, here is a new post-war problem.

In Brazil alone, this country has not only promoted a huge new rubber industry, but has materially aided in developing aluminum plants to utilize bauxite resources there, and caustic soda production. United States authorities are seeking funds at the moment to aid in promoting a rayon industry for Mexico, while other projects are under way or in prospect for Cuba and Peru, all aided by United States funds and in some cases, technical personnel. China has made considerable progress in becoming self-sufficient in some chemicals and medicinals. The United States is aiding this development, particularly in coal tar synthetics, and is even trying to find technical experts in this country to further the process. These experts would be paid by the United States. Needless to say, they are hard to find.

Reciprocal Trade

There is little doubt at this writing that the Reciprocal Trade Extension resolution will be adopted. The answer to some of the problems inherent in the above developments may be found in wise administration of the law. In the course of debate on this measure, Rep. Carl T. Curtis, Republican, Nebraska, remarked:

"I am quite sure that if the philosophy of Henry Wallace prevails these rubber plants will not have any chance of continuing in the post-war world. . . . ."

On this ground he sought an amendment to the Reciprocal Trade Extension proposal that no trade agreement with respect to natural or synthetic rubber should be entered, under the Act, to ex-

(*Turn to page 770*)

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To many people the voice of Niagara Falls is like the voice of America herself speaking—the voice of a strong, steadfast nation carrying a thunderous message of freedom and opportunity to the world.

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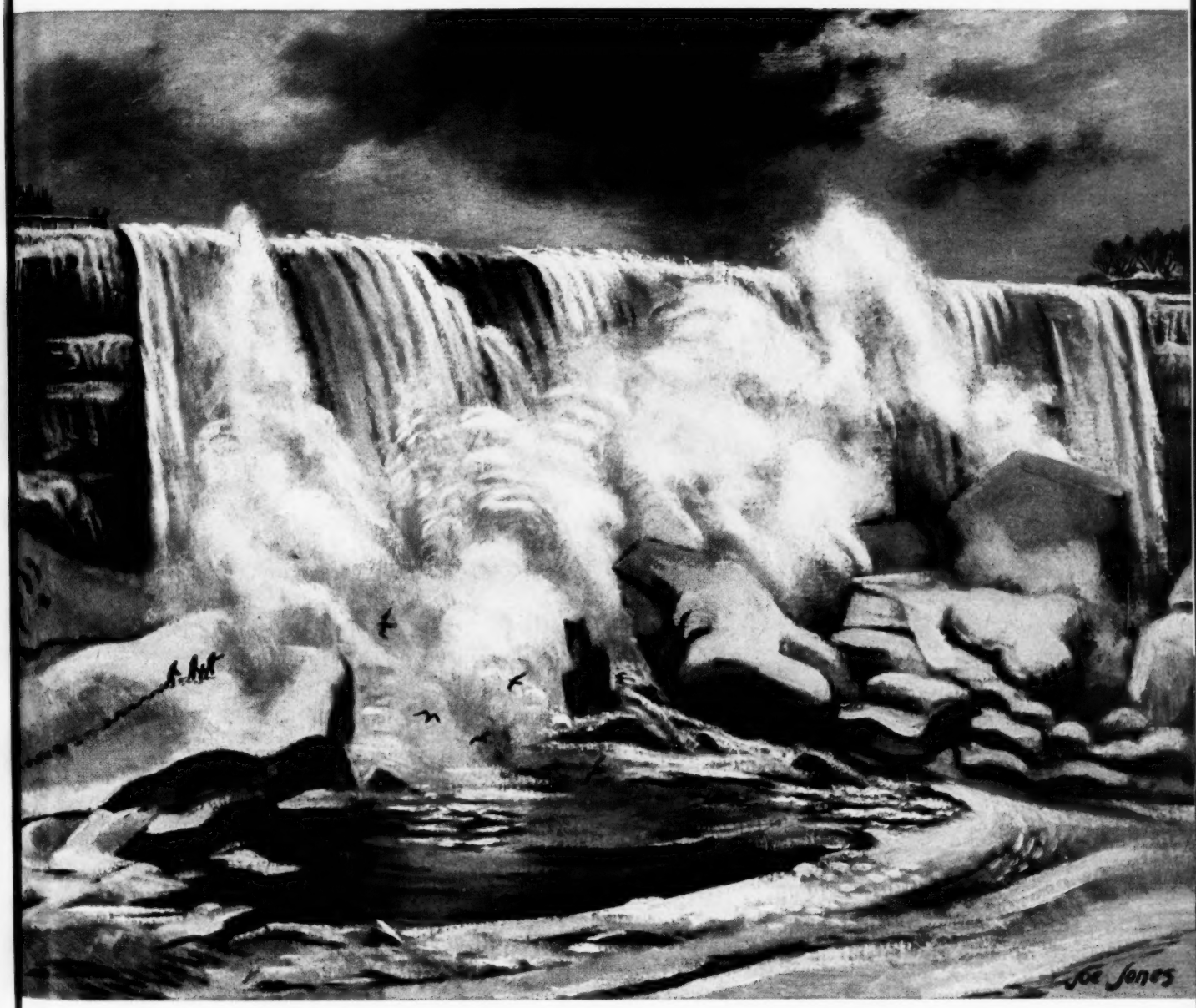

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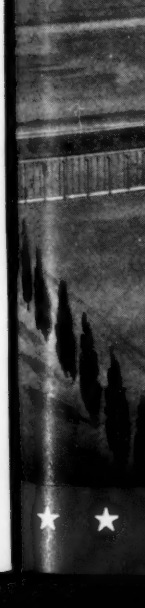

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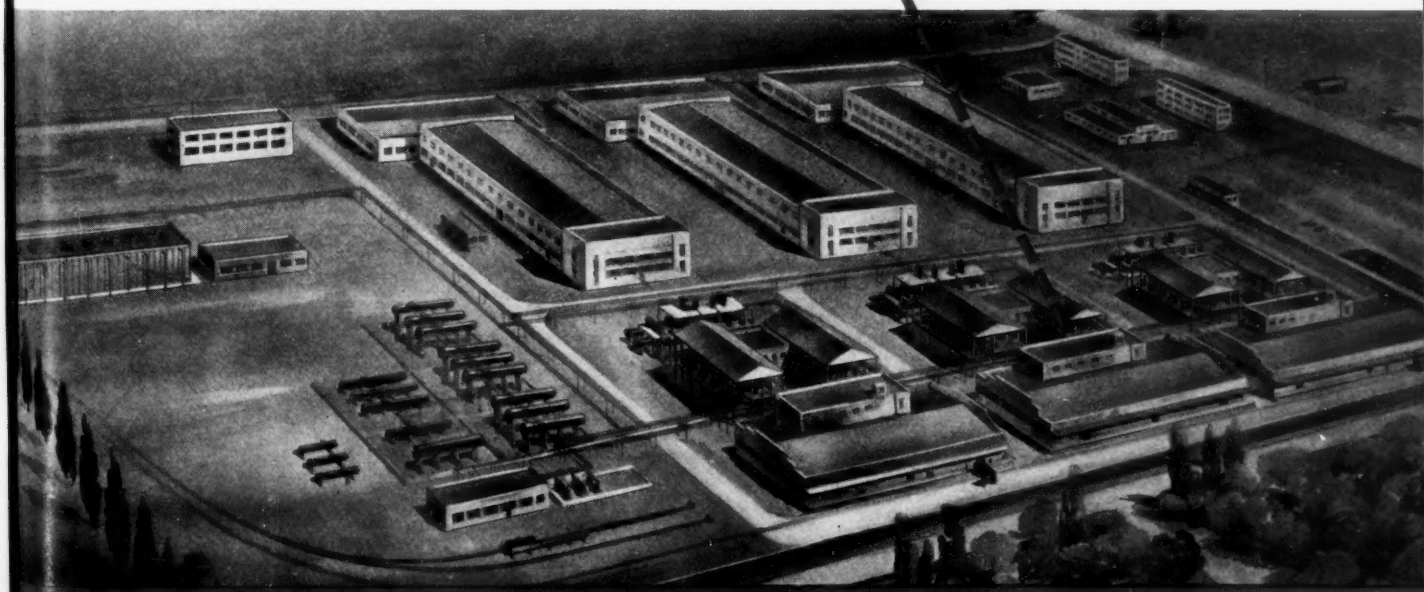

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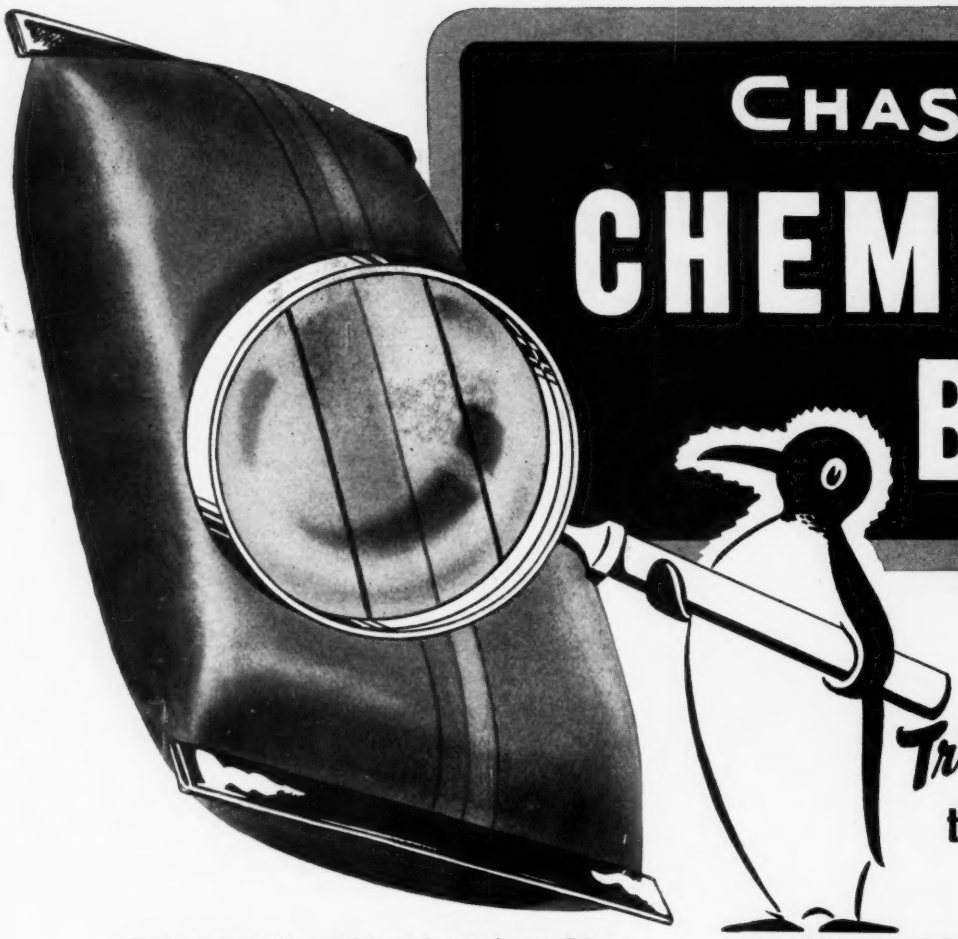

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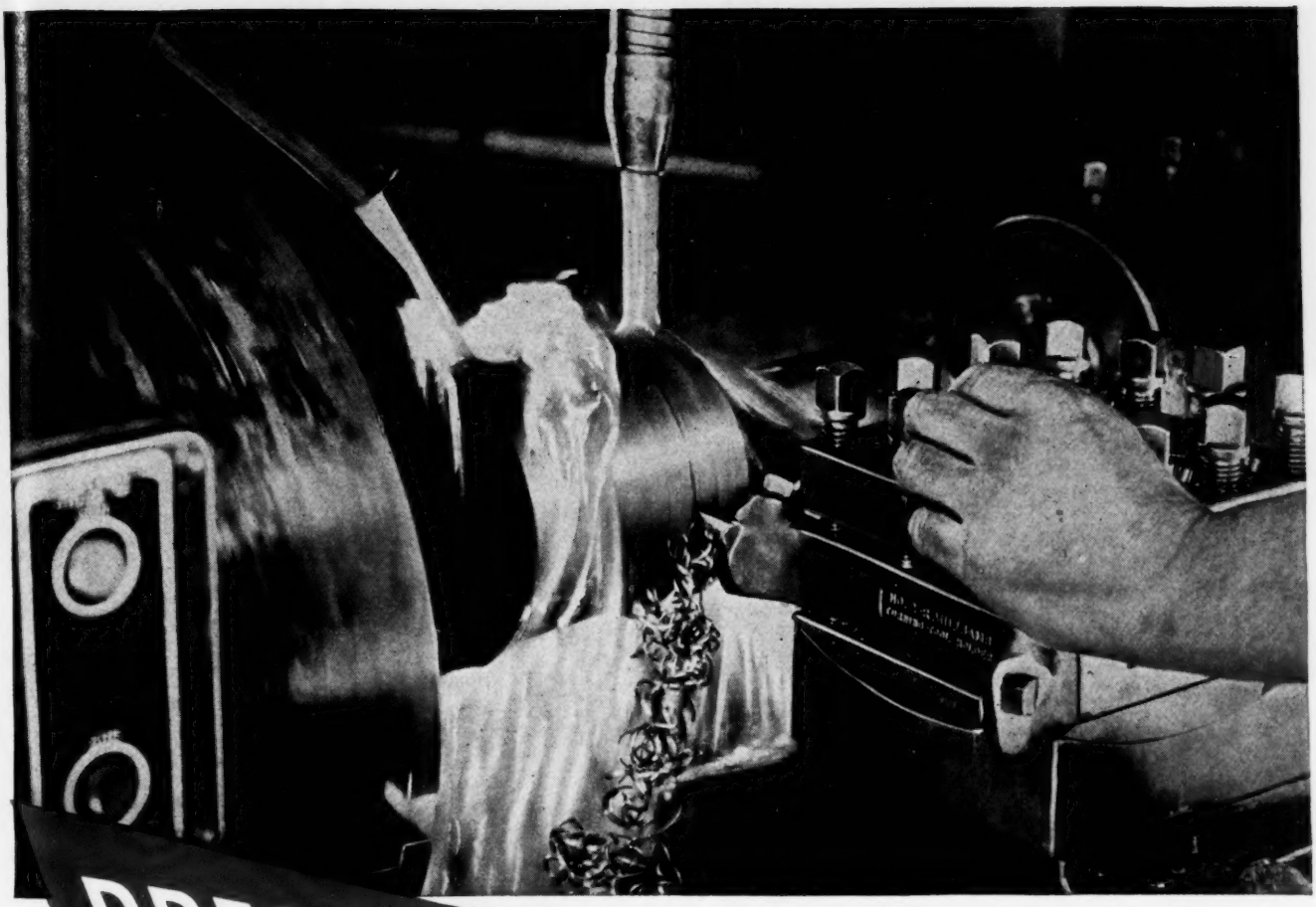
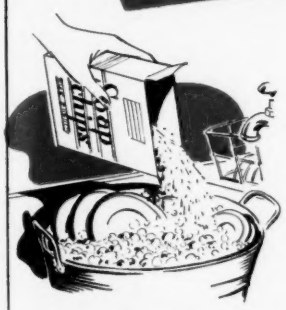
DENVER	HUTCHINSON	REIDSVILLE, N. C.
HARLINGEN, TEXAS		JACKSONVILE, FLA.



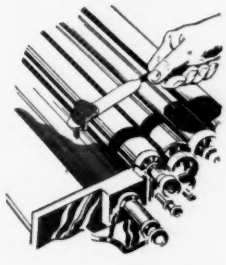
DRESINATES* ... for low-cost Oil Emulsions



IN SOAP

ALKALINE METAL CLEANERS

FOR DISINFECTANTS



PAINTS AND INKS

Here's a new group of soluble Hercules resinates—sodium and potassium salts of selected rosins—with a real flair for producing uniform, stable oil emulsions. Low in cost, Dresinates speed up the manufacturing of cutting oils, polishes, and many vegetable, animal, and mineral oil emulsions.

These new Dresinates are, in fact, useful and economical for a long list of products . . . including soaps, disinfectants, alkaline metal cleaners, emulsion paints for floor coverings, pigments, inks, pyrotechnics. To obtain technical data, and samples suited to your particular requirements, fill out the coupon below and mail today.

HERCULES
CHEMICALS FOR INDUSTRY

*Reg. U. S. Pat. Off. by Hercules Powder Company

Industrial Chemical Division
Paper Makers Chemical Department
HERCULES POWDER COMPANY
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992 Market Street, Wilmington, Delaware

Gentlemen: I am interested in your Dresinates.
Please send me information ☐ samples ☐

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Devoted To
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Eimer and Amend's new plant now has the large and well-arranged stocks, experienced personnel and up-to-date facilities to serve America's laboratories with a degree of efficiency and thoroughness that is in keeping with the requirements of advanced Science. Furthermore, this modernized organization retains the high regard for quality which characterized Eimer and Amend's 90 years at its old plant at Third Avenue and 18th Street.

America's Pioneer Laboratory Supply House now enters its 10th decade better prepared to serve scientists by providing modern laboratory appliances and tested purity reagents. Eimer and Amend's large and comprehensive stocks of both apparatus and chemicals together with its modern manufacturing facilities are at the command of every laboratory.

Consult E. & A.'s new Catalog 90
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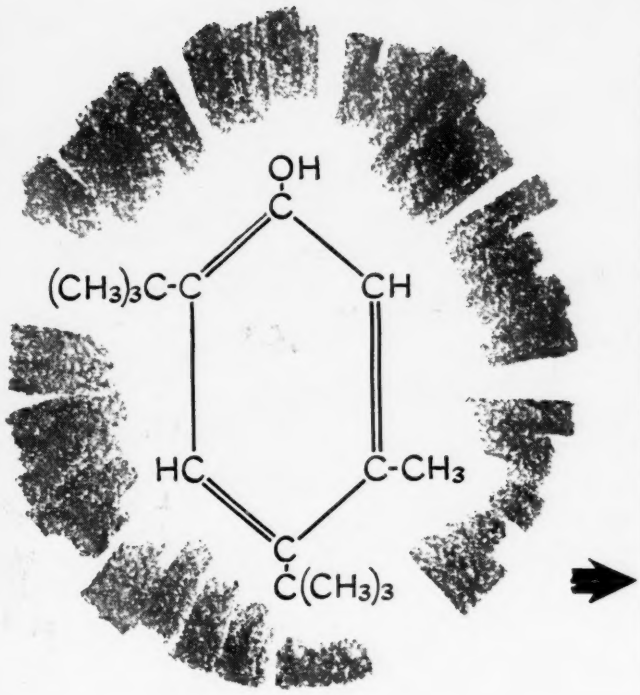
KOPPERS D. B. M.



4, 6-Di-tertiary-BUTYL-m-CRESOL

Properties: (*Pure Compound*)

Molecular Weight	220
Melting Point	62.5°C.
Boiling Point:	
At 100 mm. (approximate)	171°C.
Atmospheric (approximate)	285°C.
Specific Gravity at 50/50°F	0.920

State: Light-colored semi-solid, crystalline, mild odor.

Solubility: Practically insoluble in water. Easily soluble in alcohol, benzene, gasoline and carbon tetrachloride. Insoluble in caustic alkali solutions.

Uses: In compounding certain types of synthetic rubber, as a softener and plasticizing agent, and to improve tack. In the manufacture of resins, particularly because of its oil-solubility. It has been suggested for use as an anti-skinning agent for paints and varnishes.

Koppers will be glad to submit samples and prices on this and other coal derivatives, including tar bases, naphthalene, industrial pitches and creosote.

Koppers also supplies to the chemical industry: Coal for steam and for processing. Coke for metallurgical use and for heating. Coal processing systems. Gas plants. Gas purification systems. Gas holders. Valves. Time cycle controls. Anti-corrosive alloys. Fast's self-aligning couplings. Piston rings for compressors, pumps, and steam and diesel engines. Pressure-treated timber for damp and humid locations. Coal tar roofing, waterproofing, dampproofing, industrial pitches.—Koppers Company and Affiliates, Pittsburgh, Pa.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

WHO WANTS "PRETTY GOOD" PILLS?

When we need drugs or fine chemicals, most of us are in no mood for shopping around. We want the best that can be obtained—the assurance of quality that goes with a name like Parke, Davis & Company on a label. Knowing that behind that name are years of pharmaceutical skill and patient chemical research, we accept such products as absolutely reliable. They are U.S.P., *plus!*

And the Parke-Davis people are just like us. When they buy equipment it must be the best. Their demands are strict—corrosion resistance, non-contamination of product, ease of cleaning, and, frequently, visible control over delicate reactions. That's why they have so often chosen PYREX brand Industrial Glass.

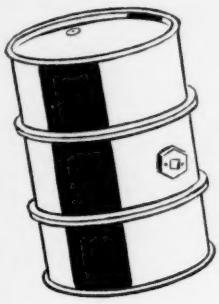
Whether it is a large condenser for organic vapors, like the one shown above (installed five years ago), a sight glass for a reaction kettle, sturdy flasks for the small scale production and storing of precious drugs, Parke, Davis & Company know that they can depend on PYREX brand glassware for strength, chemical stability and product protection.

Your own problems may not be so exacting, but if you process delicate drugs, chemicals or foodstuffs, or if your equipment suffers from troublesome corrosion, it will pay you to consult a Corning engineer. He will gladly give you the benefit of years of experience with glass piping, pumps, heat exchangers, fractionating columns and other process equipment. Write today to Industrial Division, Corning Glass Works, Corning, N. Y.

"PYREX" is a registered trade-mark and indicates manufacture by Corning Glass Works, Corning, N. Y.

CORNING
Glass Works
Corning, New York

Pyrex Industrial Glass

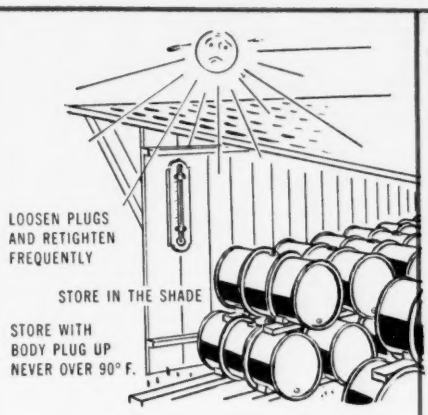


This is a drum containing acid

This is a new hand in your plant

...and here are 6 ways to keep both working for victory!

As soon as drum is received, check for leaks as corrosion-resistant lining may crack during shipment . . . Protective clothing also prevents accidents.



Remember—even water expands into steam under sufficient heat. Most chemicals require much less heat to build up dangerous internal pressures.

Hydrogen mixtures may build up inside a drum from the action of its contents on metal. A spark from a tool, a careless cigaret or match — and you have an explosion!

You never know until too late whether internal pressure will force a drum's contents out in a rush the minute you loosen the plug. *Always* play safe!

EMPTY BY GRAVITY—DRAIN COMPLETELY
NEVER WASH INSIDE
REPLACE PLUGS AND TIGHTEN
IF CONTENTS SPILL, WIPE OFF, THEN FLUSH WITH WATER

In emptying, never use pressure. After emptying, drain completely and replace plugs securely to prevent corrosion on the return trip. Never wash the inside of a drum!

Steel containers are literally worth their weight these days in ammunition. From the time they reach your plant, handle them carefully. Return them promptly.

To old hands at handling chemicals these precautions will be primer stuff — but old hands are becoming scarce in many a plant which uses substantial quantities of potentially dangerous chemicals. These suggestions are offered, therefore, as a help in impressing new employes with the importance of protecting their own safety and also conserving vital shipping containers. The suggestions are based on one of a series of bulletins issued by the Manufacturing Chemists' Association.

For more detailed help on specific chemicals conservation problems in your plant or training new employes to handle chemicals safely, write: MONSANTO CHEMICAL COMPANY, St. Louis, Missouri.

MONSANTO CHEMICALS

SERVING INDUSTRY...WHICH SERVES MANKIND

"E" FOR EXCELLENCE— The Army-Navy "E" burgee with two stars, "representing recognition by the Army and the Navy of especially meritorious production of war materials" over a two-year period flies over Monsanto.

Out of the historic fields of Florida and Tennessee comes phosphate rock, source of phosphorus chemical, essential to all living things. Tobacco grown in the South. Potato crops in Maine and Idaho. Fruit in New York and Michigan. Poultry raised in Iowa. Cattle in Wisconsin. In countless ways, phosphorus serves you. International is the largest producer of phosphate in the United States, with mines in Florida and Tennessee and large reserves in Montana. From mines and plants at more than thirty points, International is also producing potash, magnesium, fertilizers and chemicals. All of them are contributing importantly to America's fight for freedom. All of them are indispensable to industry and agriculture. *International Minerals & Chemical Corporation, General Offices: 20 North Wacker Drive, Chicago.*

International

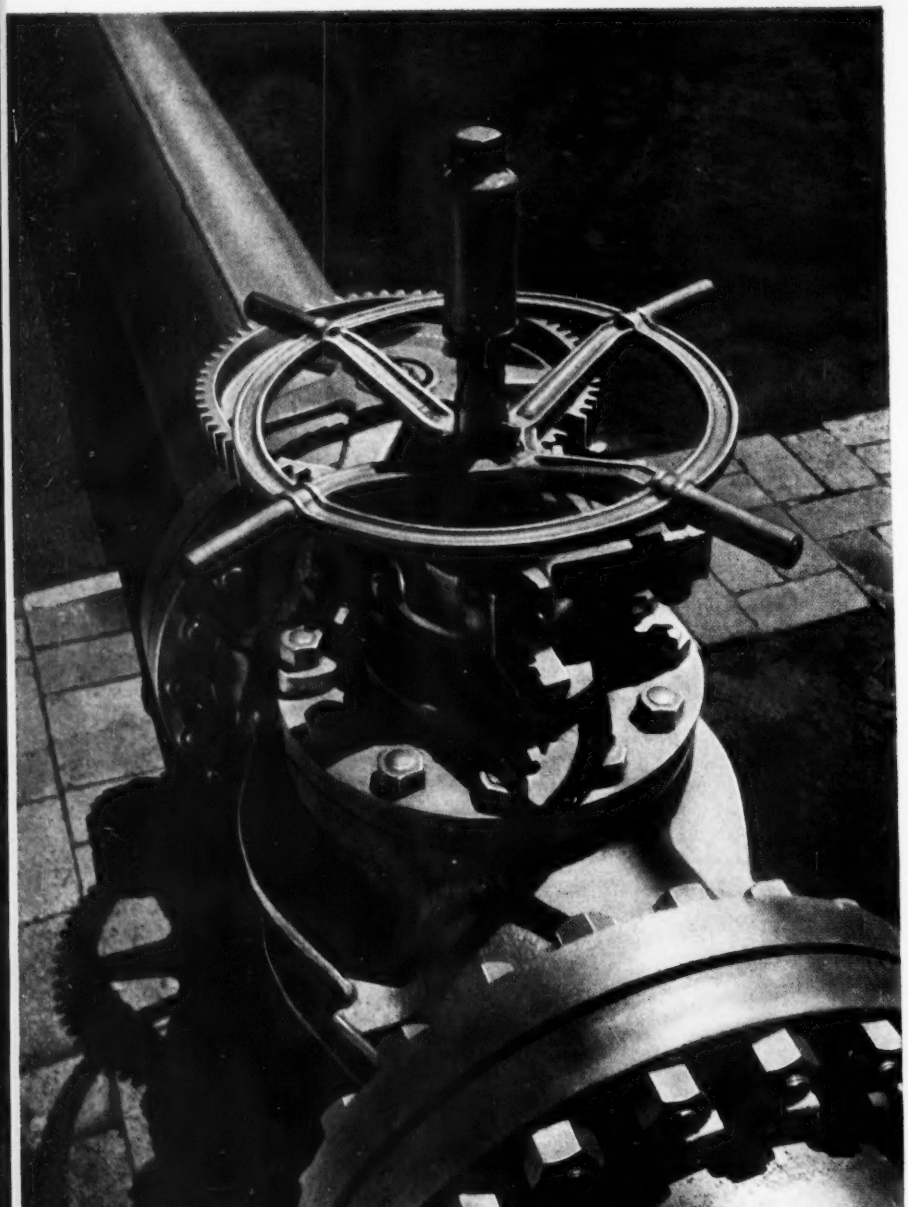
MINERALS AND CHEMICALS

Mining and Manufacturing

PHOSPHATE · POTASH · FERTILIZER · CHEMICALS

MAINTAIN FLOW-LINE TRAFFIC CONTROL THROUGH *NORDSTROM VALVES*

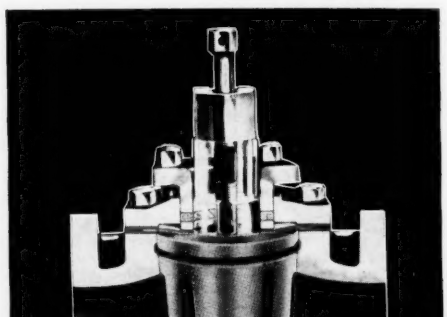
Switches on a railway have to be positive. Foolproof control of flow lines in any plant is likewise essential. If a valve closure has to be screwed down and cinched to effect a tight seal there's a strain somewhere which later may cause failure. But in a Nordstrom Lubricated Valve no strain, no cinching, no screwing down against a seat, occurs. You merely turn the plug 90° where it hits a stop. The plug rotates on a seat of lubricant. No skill is required of the operator. A full shut-off can be accomplished in a moment's time. No cinching threads are exposed to the elements. Here is the surest, safest, quickest way to control traffic through any flow-line. *Keep upkeep down with Nordstrom Valves.*



ABOVE *is presented an unretouched natural color photograph of a 16" Nordstrom Lubricated Plug Valve, spur gear operated, in service on a natural gas line. Other sizes range from ½" to 30"; wrench or gear-operated. Available in pressure ranges up to 15000-lb. test, in ratings to conform to A.S.A. and other recognized standards. Descriptive Bulletins upon request.*

The Nordstrom system of valving makes leak-proof performance a certainty!

The Nordstrom way of valving is actually an engineering service which gives to your flow lines the surest and simplest means of blocking off line flow. We have taken the basic plug valve principle and applied to it the most practical engineering refinements. We have developed special plastic lubricants to give these valves the most effective lubrication over the widest range of conditions, from sub-zero to temperatures reaching up to 1000° F.; also for all manner of line contents—gases, liquids and chemical solutions. Further, we have developed Merchrome Coating as an added armor against corrosion and erosion. By use of the lubricated plug principle, Nordstrom Valves are reinforced to withstand the stresses of high pressures. Lubrication, applied hydraulically by our patented "Sealdport" system, permits easy turning of the plug, provides a permanent seal and means of releasing the plug if it should ever become hard to turn.



Nordstrom

LUBRICATED VALVES

FOR ALL-PURPOSE SERVICE

Sealdport Lubrication

MERCO NORDSTROM VALVE COMPANY – *A Subsidiary of Pittsburgh Equitable Meter Company*

WORLD'S LARGEST MANUFACTURERS OF LUBRICATED PLUG VALVES; GASOLINE, OIL & GREASE METERS

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BRANCHES: Buffalo, Chicago, Columbia, Des Moines, Houston, Kansas City, Los Angeles, Memphis, New York City, Oakland, San Francisco, Seattle, Tulsa

CANADIAN Licensees: Peacock Bros., Ltd., Montreal • *EUROPEAN Licensees:* Audley Engineering Co., Ltd., Newport, Shropshire, Eng.

SOUTH AMERICAN Representative: The Armco International Corporation. *Main Office:* Middletown, Ohio

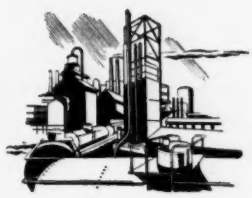
PRODUCTS: Nordstrom Lubricated Valves; Air, Curb and Meter Cocks • Nordco Valve Lubricants • EMCO Gas Meters • EMCO-McGaughy Integrators EMCO Regulators • Pittsburgh-National Meters for Gasoline, Grease, Oil, Water and other Liquids • Stupakoff Bottom Hole Gauges

Whom do we serve?

Industry, business and economic life in general are moving at tremendous speed toward a vast "chemical world" of tomorrow. The chemical, petroleum and petro-chemical industries are becoming so interrelated in serving mankind that a practical understanding of all three carries great advantages in wisely planning, designing and constructing new processing plants. *The Badger organization is unique through its broad experience in all these fields.*

Badger builds plants for the Chemical Industry

Badger experience in this diverse field extends through three generations of uninterrupted activity. Among the many chemicals Badger has helped to put into commercial production are:



Industrial Ethyl Alcohol, Isopropanol and Higher Alcohols • Methanol, Synthetic and from Wood Distillation • Ethyl Acetate, Butyl Acetate and other Esters • Synthetic Acetic Acid and Acetic Anhydride • Nitrobenzene and other Nitro-Aromatics • Formic Acid and Higher Aliphatic Acids • Carbon Tetrachloride • Chloroform, etc. • Phenol, Cresols, etc., from Tar Acids • Aniline and other Amino-Aromatics • Beverage Alcohol and Spirits • Ethyl Ether and Isopropyl Ether • Acetone and other Ketones • Glycerine and Glycols • Phthalic Anhydride • Styrene • Ammonia • Butadiene • Fatty Acids • Ethyl Benzene • Formaldehyde • Nitroparaffines • Synthetic Phenol • Dibutyl Phthalate • Synthetic Camphor.

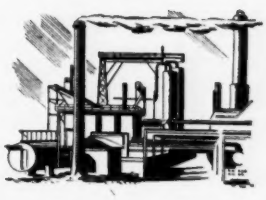
Badger builds plants for the Petroleum Industry

From the early development of petroleum distillation and fractionation, Badger process and construction engineering has been employed on many projects, large and small. Recent-years contracts embrace units and complete plants for the production of:

Aviation Gasoline and all Components • Catalytic Base Stocks • Alkylates • Fractionated Pure Hydrocarbons • Straight Run Base Stocks • Thermally Cracked and Reformed Motor Gasolines • Solvent Refined Lubricating Oils • Solvent Dewaxed Lubricating Oils • Clay Treated Lubricating Oils • Asphalts • All Primary Products from Crude.

Badger builds plants for the Petro-Chemical Industry

Among the modern base chemicals being produced from natural and petroleum refinery gases, Badger engineering and construction cover such products as:



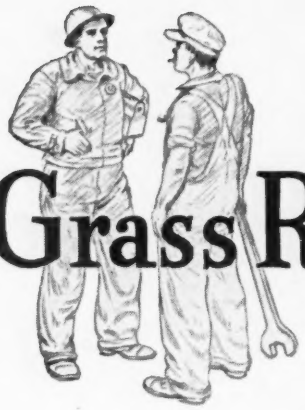
Butadiene • Styrene • Toluene • Trinitrotoluene • Ethyl and other Alcohols • Acetic Anhydride • Formaldehyde • Nitroparaffines • Chlorinated Hydrocarbons.

Booklet amplifying the scope of Badger activities in these fields is available for the asking.

E. B. Badger & SONS CO. • Est. 1841

BOSTON • NEW YORK • PHILADELPHIA • SAN FRANCISCO • LONDON

PROCESS ENGINEERS AND CONSTRUCTORS FOR THE CHEMICAL, PETROLEUM AND PETRO-CHEMICAL INDUSTRIES



A "Grass Roots" Description of a High-Toned Word

THE word is Synergism—an old-timer in the dictionary, but new to the industrial vocabulary. In the business sense, synergism means minds "clicking" together so that the net result is an idea far greater than the sum of the thoughts expressed.

Many of the wonders of war production have been worked by synergism. It is practiced by individuals, by groups, by companies. It has hatched ideas resulting in new materials, new processes, new methods, finer products.

Chemistry is an especially inviting field for synergism.

For example, synergistic thinking has evolved a "washable" ointment base that may herald the disappearance of greasy, smelly ointments from the medicine cabinet. Atlas chemists have created new Atlas emulsifiers—Spans and Tweens. Collaborating with pharmaceutical specialists, they have developed the use of Spans and Tweens so that water-soluble, non-greasy ointment bases are now practicable; what's more, improving the medicating effect.

Spans and Tweens are adaptable because of their complex chemical configurations. They make either water-in-oil or oil-in-water emulsions of either the stable or quick-breaking types. They are fine ammunition for the synergistic thinking that Atlas likes to do with its customers.

If you have emulsification problems—or feel that your present results may be improved, we would welcome the opportunity to do some synergistic thinking with you. Your request will bring a prompt response.

SPAN and TWEEN—Reg. U. S. Pat. Off.

ATLAS INDUSTRIAL CHEMICALS DEPARTMENT

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington, Del. • *Offices in principal cities* • *Cable Address—Atpowc*

Look to **Baker** for high purity chemicals and tonnage producing capacity

AS WAR'S DEMANDS create new manufacturing problems involving the use of chemicals for your company, look to Baker.

When it is necessary to have tonnage chemicals to high purity standards or exacting custom-built specifications, look to Baker.

For years, "Baker service" has meant *purity by the ton.* We used that standard as a motto in peaceful days. We feel it is a victory weapon now.
Baker's tonnage chemicals, in standard or to your own specifications, have laboratory exactness. We invite your inquiries.

★ ★ ★

In the nation's leading laboratories, Baker's Analyzed C.P. Chemicals and Acids continue to be used to determine the *qualities* and properties of countless products.

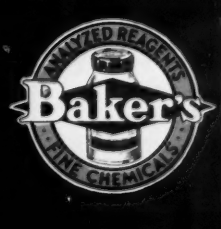
The actual analysis on the Baker label allows chemists to chart their courses for *known*, rather than unknown, percentages of impurities.

More than 60 leading Laboratory Supply Houses distribute Baker's Analyzed C.P. Chemicals and Acids. Order from your favorite supplier.

J. T. Baker Chemical Co. ***Executive Offices and Plant:*** **Phillipsburg, N. J.** ***Branch Offices:*** **New York, Philadelphia and Chicago.**

Baker's Chemicals

C. P. ANALYZED • FINE • INDUSTRIAL



MOST of American Industry knows which brand of Neutral & Common Degras is *"America's 1st choice"*—the MALMSTROM NIMCO BRAND!

It's *first* because in the production of Nimco Brand Degras, Malmstrom research has eliminated most of the crossed finger —"good enough" methods of manufacture.

That's why today, you can order Malmstrom's Nimco Brand to *your required specification* and know that your next shipment will *check* with the previous one. This is just 1 of 9 important reasons why Malmstrom's Nimco Brand is *today's favorite...* reasons that are important to every producer who wants better quality without paying a premium for quality Degras.

Testing samples are available free, but our advice is that you order a quantity to check results on a commercial basis.

America's No. 1 Choice Because It's 9 WAYS BETTER

MALMSTROM NIMCO BRAND DEGRAS NEUTRAL & COMMON

1. LOW MOISTURE
2. LOW ASH CONTENT
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4. CONTROLLED COLOR
5. UNIFORM QUALITY
6. UNIFORM TEXTURE
7. CONTROLLED VISCOSITY
8. CONTROLLED MELTING POINT
9. AVAILABLE TO *ANY* SPECIFICATION

BEST FOR RUST PREVENTATIVES • PROTECTIVE COATINGS TANNING COMPOUNDS • LUBRICATING OILS & GREASES CORDAGE OILS • METAL DRAWING COMPOUNDS • BELT DRESSINGS • PAINTS & VARNISHES • PRINTING INKS • SOAPS

N. I. MALMSTROM & CO.

America's Largest Suppliers of { **DEGRAS** • Neutral and Common • **WOOL GREASES**
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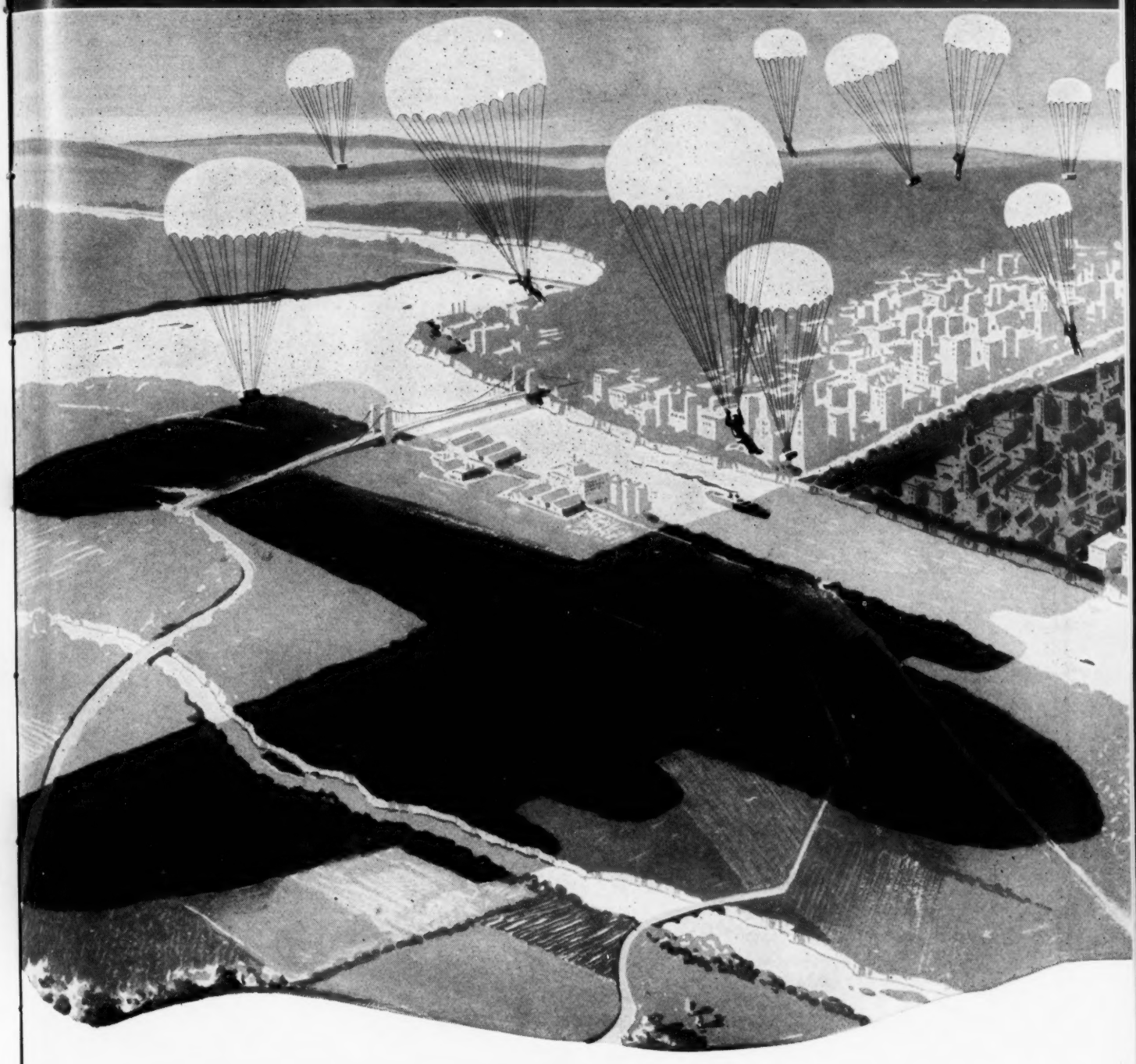
147 LOMBARDY STREET • BROOKLYN, NEW YORK

STOCKS CARRIED IN CLEVELAND • CHICAGO • KANSAS CITY • MINNEAPOLIS

DOW CAUSTIC SODA



Getting there first with the most

Air transport is dependent upon the high octane fuel which is being produced faster, today, than some of the lower octane gasolines common to American motorists.

One thousand four-motored planes in flight would require about 1,250,000 gallons of high test gasoline for a three-hour operation. Dow is supplying refiners with huge quantities of Caustic Soda to assist in the production of this vital fuel. This important industrial chemical is used as a reagent to remove sulphur from petroleum products, as a refining and sweetening agent for gasoline.

Refining is only one branch of industry that finds Dow Caustic Soda indispensable. Producers of rubber, textiles, soap, plastics and more than half a hundred other industries depend on Dow for their supply of this essential industrial chemical. Recent additions to facilities for production make Dow Caustic Soda readily available to industry in all parts of the United States.

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

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DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

Reliable HEYDEN Chemicals

FINE HEYDEN CHEMICALS

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AMMONIUM BROMIDE N. F.
Granular and Broken

POTASSIUM BROMIDE U. S. P.
Granular • Crystals • Powder

CALCIUM BROMIDE N. F.
Powder

SODIUM BROMIDE U. S. P.
Granular and Powder

LITHIUM BROMIDE N. F.
Powder

STRONTIUM BROMIDE N. F.
Crystals and Powder

Write for current products list

IN THE INTEREST OF CONTINUED PROMPT SERVICE to you and our other clients, please speed the return of our empty Tank Cars, Drums and Carboys.

HEYDEN Chemical Corporation

50 UNION SQUARE, NEW YORK CHICAGO BRANCH: 180 N. WACKER DR.

From the SOLOMONS to REYKJAVIK...

CHLORINE performs a vital service!

From Iceland's rocky shores to the steaming South Sea jungles, chlorine and chlorine compounds are protecting the health of our fighting men.

One of the most serious threats to the physical welfare of troops—particularly in an invading or occupying force—is water-borne disease. Chlorine is most effective in fighting this ever-present hazard. That is why it is an *essential* part of the equipment of every unit of our armed forces—protecting vital water supply and promoting sanitation. It represents a service we are proud to perform.

Our wartime experience in producing chlorine for this and many other urgent and vital needs will help us to serve you better after this war is won.

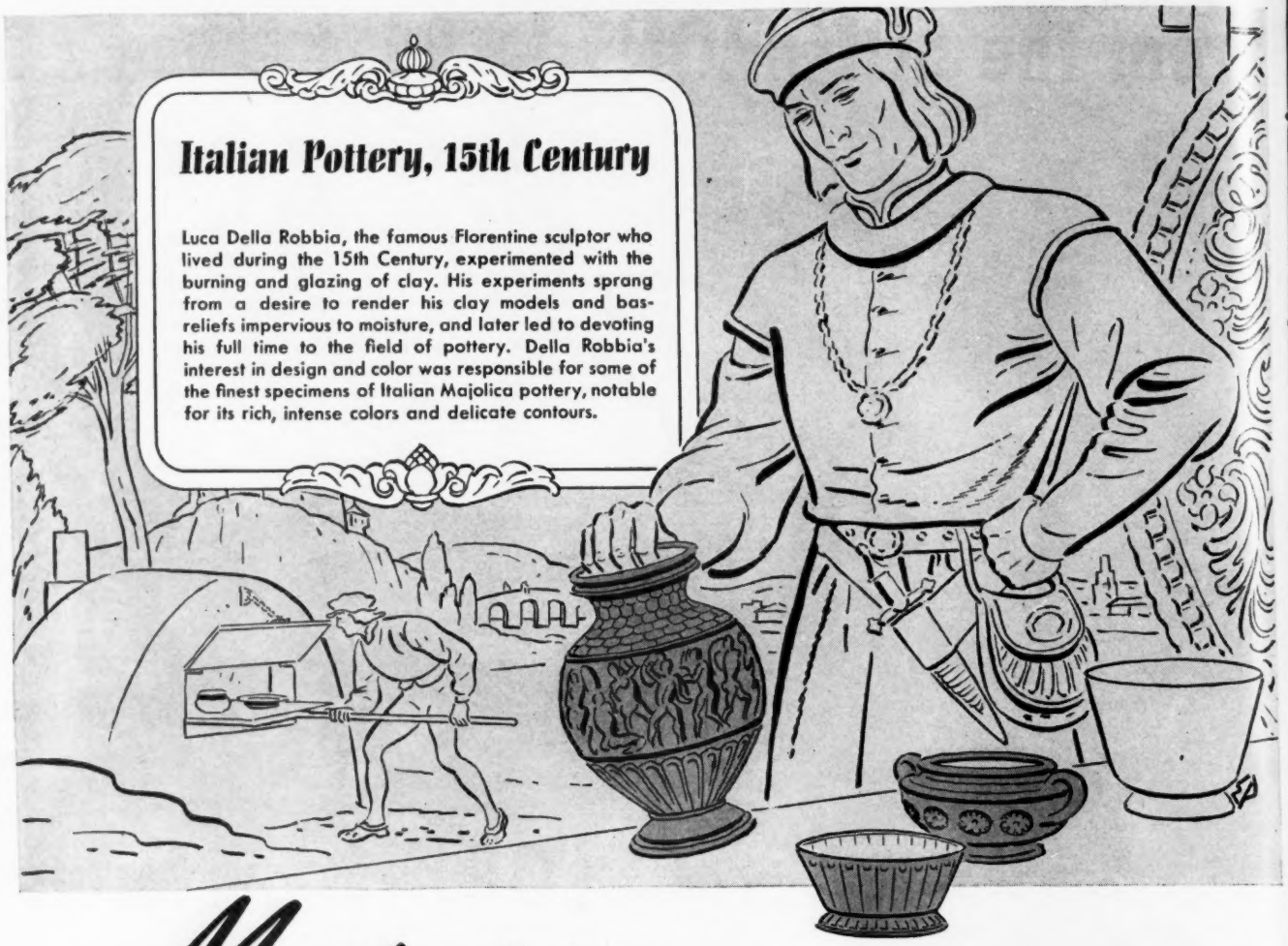
CHEMISTRY IS THE KEYSTONE OF INDUSTRY

PENNSYLVANIA SALT MANUFACTURING COMPANY

Chemicals

1000 WIDENER BUILDING • PHILADELPHIA

NEW YORK • CHICAGO • ST. LOUIS • PITTSBURGH • WYANDOTTE • TACOMA


Italian Pottery, 15th Century
Luca Della Robbia, the famous Florentine sculptor who lived during the 15th Century, experimented with the burning and glazing of clay. His experiments sprang from a desire to render his clay models and bas-reliefs impervious to moisture, and later led to devoting his full time to the field of pottery. Della Robbia's interest in design and color was responsible for some of the finest specimens of Italian Majolica pottery, notable for its rich, intense colors and delicate contours.

Masterpieces OF POTTERY

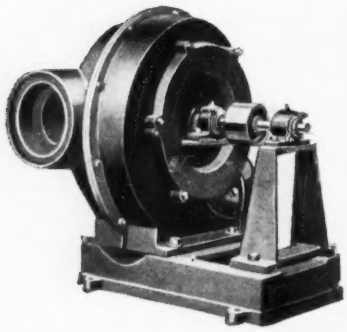


FIG. 100
EXHAUSTER
ON BASE

TODAY, in contrast to Della Robbia's "experiments" with firing and glazing, we, at General Ceramics, *know* the peculiarities of fired clay—we *know* that to obtain the very best in vitrified stoneware, clay must undergo a period in air drying with controlled conditions of temperature and humidity—we *know* the proper length of firing time and at what degree the temperature must be kept.

General Ceramics Chemical Stoneware is made from finest obtainable clays, is carefully molded—mechanically and by hand—and is fired at a high temperature. The result is a durable, acid-proof body which insures plant personnel and property against hazardous leaking. The hard glazed surface of General Ceramics Chemical Stoneware is easy to keep clean, thus eliminating product contamination.

Among the many products manufactured by General Ceramics are acid-proof pipe, valves, fittings, kettles, jars, pots, pumps, exhausters, coolers, condensers, acid elevators, towers, filtering equipment and tourills.

Other products include Steatite Insulators made by General Ceramics & Steatite Corp., Keasbey, N. J.

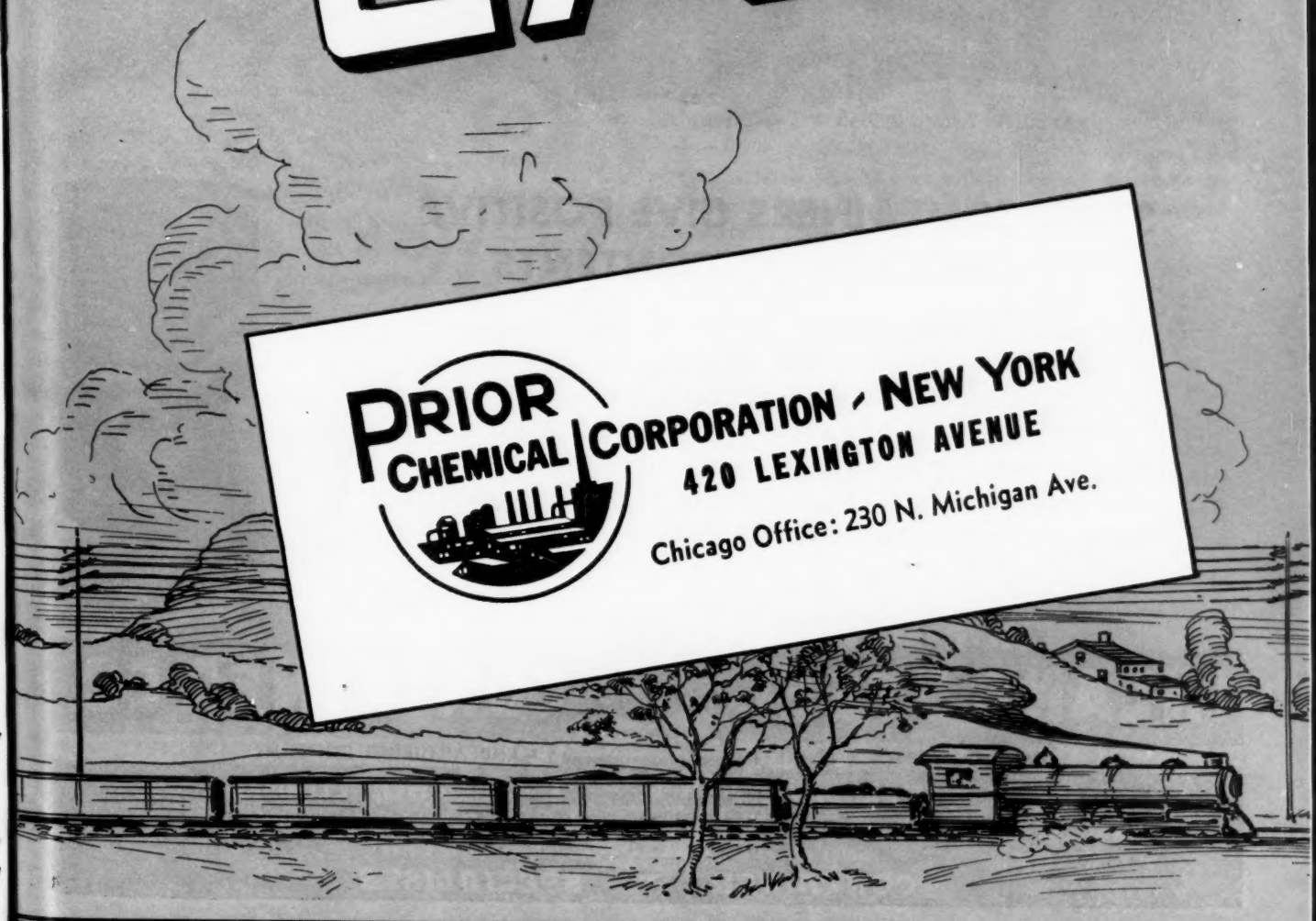
General Ceramics Co.

GENERAL CERAMICS COMPANY
CHEMICAL STONEWARE

CHEMICAL STONEWARE DIV.
KEASBEY • NEW JERSEY

3825

SALT CAKE

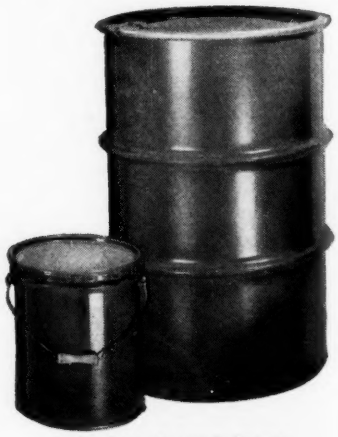


PRIOR CHEMICAL CORPORATION · NEW YORK
420 LEXINGTON AVENUE
Chicago Office: 230 N. Michigan Ave.

Landing gasoline in the tropics.
ACME PHOTO

STEEL CONTAINERS GIVE POSITIVE PROTECTION TO CONTENTS

Wartime shipping must be packed to withstand irregular handling—unavoidable delays in loading—inadequate facilities at unloading points. It is often necessary to store war materials such as foods, munitions and gasoline in the open where they are subject to attack by destructive elements. Steel containers provide positive protection of contents under all conditions.



Steel pails and drums
3 gal. to 55 gal. capacities.

INLAND STEEL CONTAINER CO.

Formerly WILSON & BENNETT MANUFACTURING COMPANY

6532 S. MENARD AVE. CHICAGO, ILLINOIS

Plants at Chicago—Jersey City—New Orleans—Richmond, Calif.

Sales offices in all principal cities

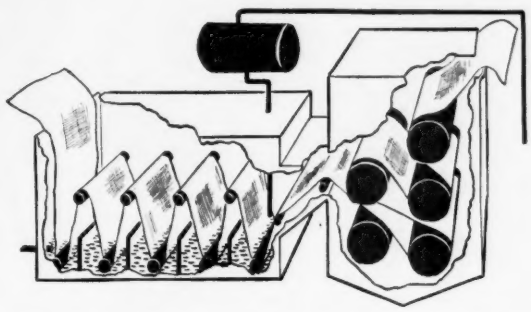
CONTAINER SPECIALISTS

INLAND STEEL CONTAINER CO. Steri Seald LINED STEEL CONTAINERS JERSEY CITY · NEW ORLEANS RICHMOND, CALIF. CHICAGO No.

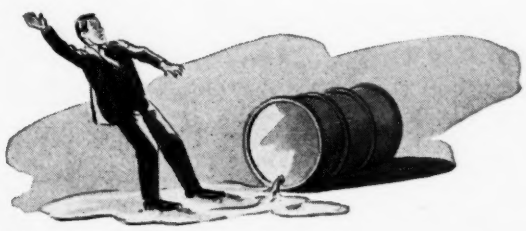
Published by Du Pont Electrochemicals Department

NEWSLETTER
No. 2
Current Developments of Interest to Users of Chemicals

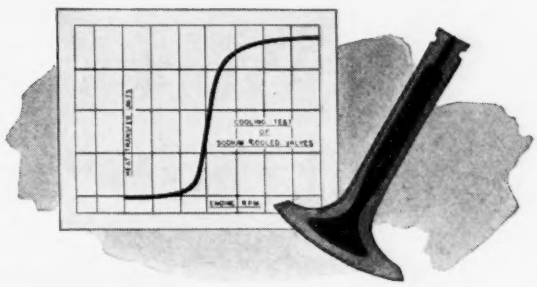
"DRY CLEANING" WOOLEN PIECE GOODS. For many years spinning and weaving oils have been removed from woolen piece goods by wet-washing methods. Today, a number of prominent mills are using the Derby continuous dry cleaner —a recent development of great promise. No soap or alkalis. No wash water. No large washing tanks. No cumbersome dryers. Just a small compact machine, occupying about 200 sq. ft. of floor space. Du Pont Trichlorethylene is the solvent, used in place of soap, water and other chemicals. The operation



is simple. After looming, the woolen piece goods—uniform cloth, blanket material, etc., are sewed end-to-end to form an endless belt of cloth which is automatically fed through the Derby machine at 25 to 75 feet per minute (about ½-mile per hour). Spinning and knitting oils are extracted quickly and completely, and the dried cloth is immediately available for further processing. The oils are recovered for reuse; likewise most of the extraction solvent. Tons of ammonia, naphtha, soap, sulfonated oils, soda ash and fuel, required by the older method, are now released for other important uses.



STICKING 'EM DOWN. A satisfactory replacement for rubber latex, which since Pearl Harbor has practically disappeared from American manufacture, is Polyvinyl Acetate Emulsion. Not only can it be used to modify rubber latex emulsions, but for many applications it has proved so much better than latex it seems likely to be a permanent replacement. It can be used without expensive or flammable solvents. For dilution, only water is needed. In its own right a powerful adhesive, it has been found extremely satisfactory for bonding a wide variety of materials such as Cellophane, cloth, felt, straw, paper, cardboard, porcelain, metal, mica, stone, leather, wood, cork, plastic sheets and film. By treatment to vary its properties, the emulsion is useful in making other adhesives which are unusually strong and permanent under many conditions.



MORE POWER IN THE AIR. Sodium—that versatile chemical so useful for manufacture of vital war materials—has an important part in modern fighters, bombers, transport planes. It's the coolant in the exhaust valve of the engine. Practically all engines of 300 h.p. or over in both commercial and military aircraft have these self-cooling valves. They can take the tremendous punishment of the violent detonations and preignitions of the modern airplane. The coolant, Sodium, is sealed tightly in the interior cavity of the valve. As the engine operates, the valve head is heated by the combustion of the gases. This heat melts the sodium and the motion of the valve sprays the liquid sodium over the entire inner surface of the head cavity. The sodium absorbs the heat from the head and is thrown into the stem of the valve. The absorbed heat is dissipated through the stem guide to the cylinder and the cooling system.

★ ★ ★

Above and beyond its specific contributions to the war, the Du Pont Company offers something else to the nation—an organization, each department of which pools its knowledge, its skills and its products to render an overall service. This seasoned experience is available for specific assistance in the practical, useful application of du Pont chemicals.

DU PONT
REG. U. S. PAT. OFF.

CHEMICALS
PROCESSES AND SERVICES

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

An activated aid to processing **DARCO** REG. U.S. PAT. OFF. An active aid for purity specifications

It Works Behind the Scenes

of chemical reactions

In many chemical processing operations today, there is an important material that never enters into the chemical reaction . . . never alters an atom, never meddles with a molecule, of the finished product.

This material is Darco—the activated carbon.

Chemically, Darco is inert. But physically, it works behind the scenes—pulling strings in your favor—by freeing liquids of unwanted impurities, and thus producing a more desirable finished product, faster and at lower cost.

With Darco, crystals become purer and brighter—and yields are bigger. With Darco, liquids and solutions used continuously in the plant for cleaning or processing, can frequently be maintained at a required purity level, or reclaimed periodically for reuse.

In scores of ways, Darco is reducing production costs—and improving product quality. Sugar refiners and chemical manufacturers will tell you what Darco has done for them. So will vintners . . . confectioners . . . electroplaters . . . dry cleaners . . . water filtration engineers.

So that your technical staff can see how Darco may be put to work in your own business, we'll be glad to send you a copy of "Counter-Current Treatment with Activated Carbon." Write for it today!

DARCO

DARCO—REG. U. S. PAT. OFF.

DARCO CORPORATION

60 East 42nd Street, New York, N. Y.

STANDARDIZED STEARATES
Eliminate Guesswork

TYPICAL ANALYSIS OF MALLINCKRODT STANDARD STEARATE PRODUCTS

Name	Bulk in Fl. Oz. per Lb.	Metallic Oxide	*Extractable Acid	Softening Point
Aluminum Stearate Technical M	52	15%	6%	170° C.
Aluminum Stearate Technical D	54	8.4%	7%	157° C.
Aluminum Stearate Technical D 5-47	58	8.7%	4.8%	160° C.
Aluminum Stearate Technical D Fluffy	70	8.2%	8%	148° C.
Flatting Agent No. 22	70	8%	7.5%	.....
Aluminum Stearate Technical T D (Formerly named No. 1-49)	80	7.7%	15%	130° C.
Aluminum Stearate Technical T	48	6%	25%	109° C.
Aluminum Stearate Technical T for Paint & Varnish Manufacture	76	6%	24%	115° C.
Calcium Stearate Technical	35	9%	1.5%	125° C.
Calcium Stearate Impalpably Powd.	125	9%	1.5%	146° C.
Zinc Stearate U.S.P. XII	160	14%	2%	118° C.
Zinc Stearate U.S.P. XII "S"	160	14%	2%	120° C.
Magnesium Stearate Technical	40	6.8%	2.5%	125° C.
Magnesium Stearate Impalpably Powd.	140	6.8%	2.5%	125° C.

The water content of stearates is limited to 1%. In most cases the actual amount is less.
The water-soluble material is also limited to 1% and is usually less.
**The "Extractable Acid" is determined by extraction with boiling Acetone.*

WHETHER you use Stearates in

LUBRICANTS
PAPER COATINGS
PAINTS & VARNISHES
WATER REPELLENTS
COSMETICS
PHARMACEUTICALS

or to modify the properties of other colloidal systems.

MALLINCKRODT STEARATES

simplify your processing problems, make it easier for you to maintain uniformity of your product. Our long experience in producing STANDARDIZED STEARATES is your assurance of maximum lot-to-lot dependability.

Standardized Stearates of Aluminum, Calcium, Magnesium, and Zinc are now available. Special applications of the soaps of many other metals have been studied in our laboratories. We invite you to draw on our extensive experience in the application of the Standardized Stearates, or to confer with us on your particular needs for other metallic soaps. Call our representative or write us today for the New Product Data Booklet on Stearates.

FINE CHEMICALS Mallinckrodt SINCE 1867

MALLINCKRODT CHEMICAL WORKS

QUALITY IN QUANTITY

76 Years of Service to Chemical Users

FOR VICTORY BUY UNITED STATES WAR BONDS STAMPS

ST. LOUIS • PHILADELPHIA • CHICAGO • NEW YORK • MONTREAL • LOS ANGELES

SPECIAL designs in acid-proof chemical stone ware require more than selected raw materials, careful forming and controlled processing. An intricately baffled box or an unusually large tank made in one integral piece without seams or joints, takes plenty of experience and skill to form.

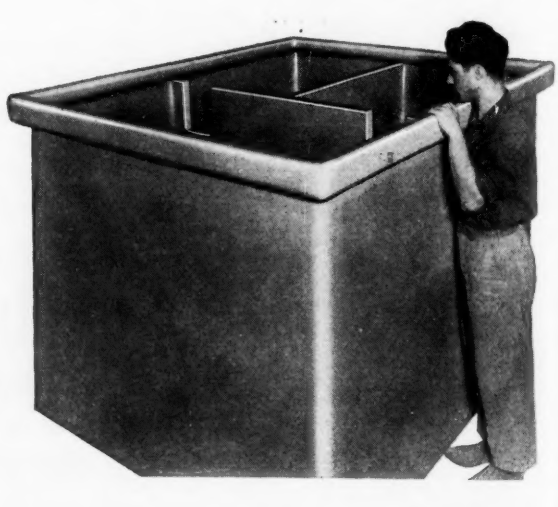
The craftsman's touch shows in Knight handbuilt equipment made to the customer's specifications. Over 35 years of first-hand experience in design, materials and processing plus the work of these "craftsmen in clay" brings you KNIGHT-WARE quality chemical equipment.

Complete resistance to chemical corrosion is an inherent quality of KNIGHT-WARE. "It is the body itself," not a glaze or a coating that is acid-proof.

MAURICE A. KNIGHT. • 206 Kelly Ave., Akron, Ohio

KNIGHT-WARE
CHEMICAL EQUIPMENT

In addition to countless items of special design, Knight-Ware chemical equipment can be had in standard items such as valves, piping, fittings, acid jars, kettles, coils, filters and towers.



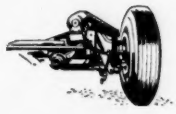
BARDOL* in BUNA S . . . *Tests have shown that Bardol is completely compatible with Buna S (GR-S), processing readily. It functions as a wetting agent and is also an effective plasticizer.*

. . . Bardol promotes dispersion of sulphur and accelerators in the elastomer, thereby improving behavior and performance of the compounds. Users have found that when incorporated in appropriate amounts, Bardol contributes to:

GREATER RESILIENCE ***AND LOWER HYSTERESIS***

IMPROVED RESISTANCE TO ABRASION

HIGH TENSILE STRENGTH AND ELONGATION

LOW PERMANENT  ***AND COMPRESSION SET***

FLEXIBILITY AT LOW TEMPERATURES, RESULTING IN

GREATER RESISTANCE ***TO PLY SEPARATION.***

For complete details, wire or write

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK

*Reg. U. S. Pat. Off.

ONE OF AMERICA'S GREAT BASIC BUSINESSES . . .

Barrett

THIS *is American Progress!*

The U. S. Army's high-velocity 3-inch antitank gun shown at the right, alongside the old 37 mm. antitank gun at the left, is capable of destroying any enemy tank with one shell, at long range, and is superior to the German 88 mm. as an antitank weapon.

HERE'S tangible evidence of American know-how. At one time, the opponents of the Axis forces were practically at the mercy of the Nazi tanks, but today it's almost a routine matter to dispose of these would-be "monsters" whenever they are encountered, thanks to American ingenuity which has furnished our fighting men with powerful weapons.

★ ★ ★

The Army-Navy "E" has been awarded to all three plants of Merck & Co., Inc. for Excellence in Wartime Production.

OUR modern industrial research laboratories—also stimulated by the necessities created by all-out war—have reflected progress in another direction. For example, Merck research chemists and technicians have found a solution to the problem of increased production of drugs and chemicals, such as the sulfa-drugs, vitamins, arsenicals, antimalarials, anesthetics, and other essential materials. And these vital substances now are being produced on a scale which, only a short time ago, was considered well-nigh impossible to attain.

Although the production of fine drugs and chemicals by Merck & Co., Inc. has by no means reached its zenith, every attempt is being made to supply the needs of our Armed Forces, and at the same time, secure equitable distribution of available stocks to meet the requirements of our customers in many fields.

BUY WAR BONDS FOR VICTORY

MERCK & CO., Inc. *Manufacturing Chemists* **RAHWAY, N. J.**

New York, N. Y. · Philadelphia, Pa. · St. Louis, Mo. · Elkton, Va. · Chicago, Ill. · Los Angeles, Cal.

In Canada: **MERCK & CO. Limited, Montreal and Toronto**

Meet Betta..

Master Bubble Blower

Nature gave him the gift for blowing bubbles—strong, tough bubbles that serve as a hatchery nest, floating his offspring to fame and fortune. The tropical Betta, colorful Siamese fighting fish, is really a master of flotation.

The mining industry has found Betta's principle a profitable one. Through the greater collective and flotation power of Pentasol Amyl Xanthate—made from five Sharples Amyl Alcohols—hard-to-float ores become readily workable . . . higher yields are realized from old tailing dumps . . . and urgently needed minerals go to war in record time and in fabulous volumes.

While Flotation Reagents are speeding recoveries of strategic minerals for the mining industries, many other Sharples Chemicals are helping the production front beat the Axis—with products for the rubber industry—for drugs and pharmaceuticals—for munitions, steel, plastics, oil refining, agriculture, surface coatings, photography. And Sharples Research meanwhile maintains a long-range schedule pointed at the post-war demands of a vastly enlarged industrial world.

SHARPLES CHEMICALS AT WAR

AMYL ALCOHOLS • AMYL ACETATE
AMYL PHENOLS AND DERIVATIVES
ALKYLAMINES AND DERIVATIVES
ALKYLAMINOETHANOLS
ETHYL ANILINE • CHLOROPENTANES
AMYL NAPHTHALENES
AMYL MERCAPTAN

ARMY E NAVY

SHARPLES CHEMICALS INC.

Philadelphia *Chicago* *New York*

BUY WAR BONDS SHARPLES TRADE MARK CHEMICALS ...REGULARLY!

SHARPLES SYNTHETIC ORGANIC CHEMICALS

PENTASOL (AMYL ALCOHOLS)
PENT-ACETATE (AMYL ACETATE)
PENTALARM (AMYL MERCAPTAN)
BURAMINE (CRUDE BUTYL UREA)
PENTAPHEN (p-tert-AMYL PHENOL)
o-AMYL PHENOL DIAMYL PHENOL
AMYLAMINES BUTYLAMINES ETHYLAMINES
DIETHYLAMINOETHANOL DIBUTYLAMINOETHANOL
ETHYL ETHANOLAMINES BUTYL ETHANOLAMINES
ETHYL ANILINE
DICHLORO PENTANES
AMYL NAPHTHALENES AMYL BENZENES
MIXED AMYL CHLORIDES DIAMYL SULFIDE
n-BUTYL CHLORIDE MIXED AMYLENES

SHARPLES CHEMICALS Inc.

EXECUTIVE OFFICES: PHILADELPHIA, PA.
PLANT: WYANDOTTE, MICH.

Sales Offices

New York Chicago Salt Lake City
West Coast: MARTIN, HOYT & MILNE, INC., Los Angeles . . San Francisco . . Seattle

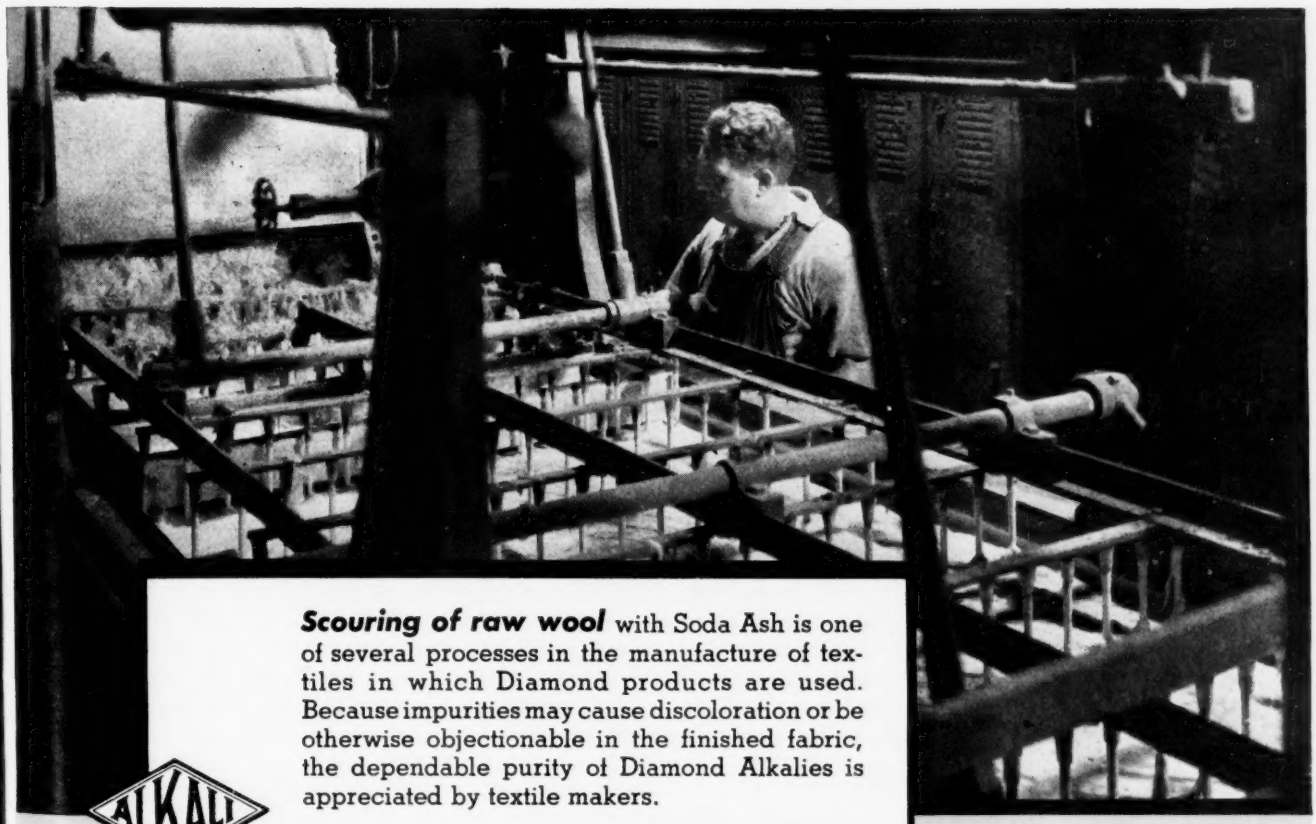
SHARPLES TRADE MARK CHEMICALS

SCOURING OF *RAW* WOOL

JUST ONE OF THE MANY PROCESSES IN WHICH

DIAMOND ALKALI

helps speed effective cleaning

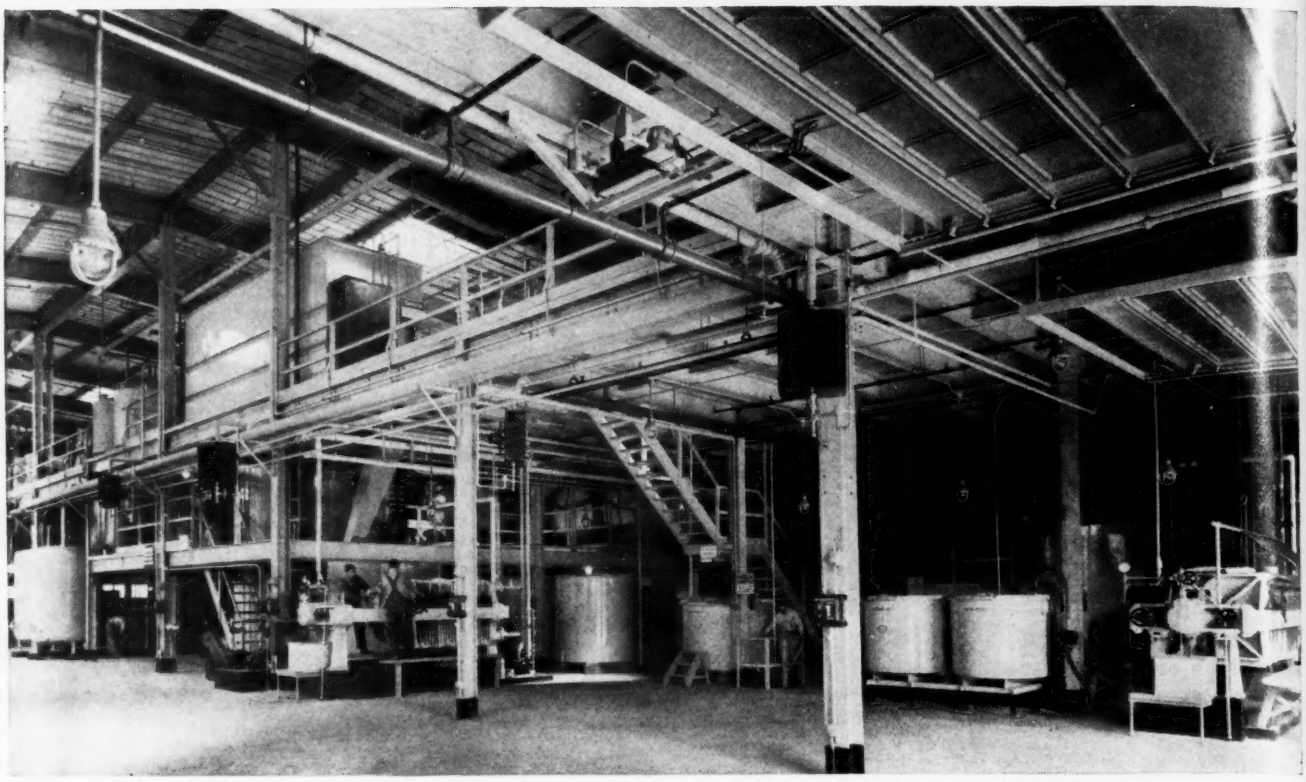


Scouring of raw wool with Soda Ash is one of several processes in the manufacture of textiles in which Diamond products are used. Because impurities may cause discoloration or be otherwise objectionable in the finished fabric, the dependable purity of Diamond Alkalies is appreciated by textile makers.

ALKALI

DIAMOND ALKALI COMPANY

PITTSBURGH, PA., *AND EVERYWHERE*



Vitamins for Victory

● In all wars since history began disease has been the cause of more casualties, both military and civilian, than the weapons of the enemy. During the last World War it began to be recognized that some of these diseases, such as scurvy, were caused by a definite deficiency of some essential ingredient in the diet while others probably spread because of lowered resistance of the population due to this and other dietary lacks. Because of their relationship to life, these essentials were termed vitamins. Since practically nothing was known about them at the time, little could be done toward correcting these deficiencies.

Since then science has made tremendous strides in the chemistry of vitamins. The structure of most of those isolated has been determined and methods for synthesizing many of them developed.

The nations of the world have not been slow to recognize the importance of the vitamins. In her rearmament program Germany included factories for their production along with those for manufacturing guns, explosives and other munitions of war. One important ingredient in the emergency ration of the German parachute troops has been tablets of synthetic Ascorbic Acid (vitamin C). Our own Government has also recognized the importance of this vitamin and has included a product containing synthetic Ascorbic Acid in the ration of our Armed Forces.

The United States and the British Empire have also included the maintenance of civilian health and morale in their war plans. Enriched flours and breads, to which a number of the vitamins together with certain minerals have been added, have received official sanction. This development has been hampered by an insufficient supply of one of the vitamin ingredients – Riboflavin (vitamin B_2).

Chas. Pfizer & Co., Inc. has been one of the largest producers of Ascorbic Acid (vitamin C) for several years. There has been a continual increase in our production of this synthetic vitamin and plans are now in the process of consummation which will still further enlarge our productive facilities.

After a research program of several years, the production of Riboflavin (vitamin B_2) was started by our Company in 1940. At the present time we are bending every effort toward a great increase in the size of our productive facilities in order to assist in supplying the large quantities of this essential vitamin which are needed.

MANUFACTURING CHEMISTS • ESTABLISHED 1849

Chas. Pfizer & Co., Inc.

81 MAIDEN LANE, NEW YORK • 444 W. GRAND AVE., CHICAGO, ILL.

Safer leather clothing for America's airmen

PRIMALS

NOT long ago gasoline and oil absorbed into flyers' leather clothing presented a serious hazard. But not today.

Now shearlings for flying suits are resistant to these materials because they are finished with PRIMAL.

The PRIMALS are a series of resin finishes developed in the Rohm & Haas Leather Laboratory, produced in a Rohm & Haas plant. Before the war they found wide use in leather clothing, upholstery and many other products where flexibility and water resistance were needed.

Today the PRIMALS help clothe America's flyers . . . help produce the shearling garments that are safer and that remain flexible under extreme conditions.

★**DIMETHYLAMINE** The synthetic form of nature's own accelerator of the liming process.

★**OROPON** The original synthetic bate.

★**LEUKANOL** The tanning material responsible for the popular acceptance of white leather.

★**TAMOL NNO** The dye assist which made pastel colors possible.

★**PRIMAL** Resin finish offering outstanding flexibility in finished leather.

★**ORTHOCHROM** The finish which produces washable leather.

DIMETHYLAMINE, OROPON, ORTHOCHROM, TAMOL NNO, PRIMAL *and* LEUKANOL *are trade-marks, Reg. U. S. Pat. Off.*

ROHM & HAAS COMPANY

WASHINGTON SQUARE, PHILADELPHIA, PA.

Manufacturers of Chemicals including Plastics . . . Synthetic Insecticides . . . Fungicides . . . Enzymes . . . Chemicals for the Leather, Textile and other Industries

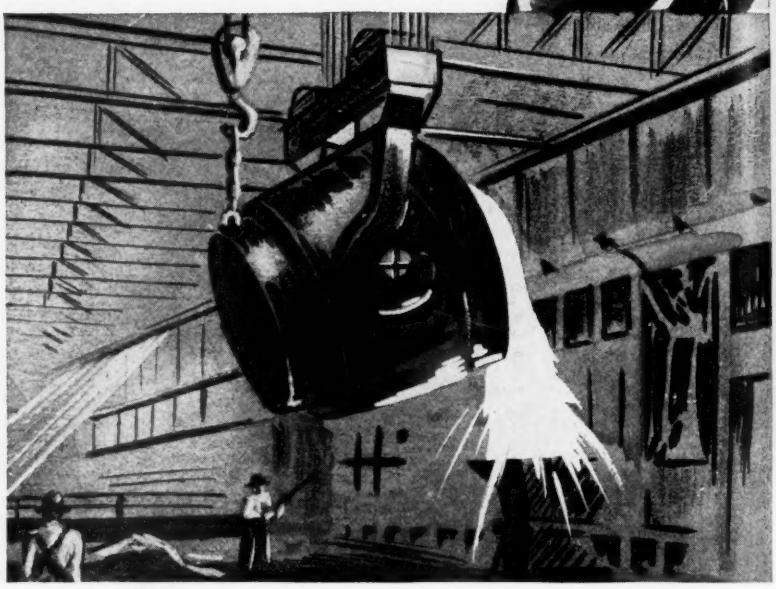
BUBBLING OVER WITH ENERGY—

● The reason for Marblehead's recognized high efficiency in chemical processes, is the power of its high chemical energy, ready for release immediately to do the job in hand.

This store of pent-up energy is the accumulation of centuries of build-up in the extensive Marblehead limestone quarries, where the bones of prehistoric monsters and the shells of tiny fossils have combined to produce limestone of unusually high calcium content.

Manufactured from this choice limestone by modern methods, under strict technical control, Marblehead Chemical Lime brings you this vast fund of pure, high chemical activity to apply to your process—to help turn out more product at less cost—to assure you thorough action—to help maintain your fixed formulae—to prevent delays and interruptions in your production.

In addition, Marblehead possesses valuable *physical* characteristics, even more important in some processes than the chemical qualities—soft, fine texture—of fast or slow-settling nature—quick slaking—freedom from grit.



MARBLEHEAD
High Calcium
CHEMICAL LIME

Used throughout industry, for

STEELMAKING—PAPER & BOXBOARD — LEATHER — WIRE DRAWING — CHEMICALS — PAINT & VARNISH — BRICKS — FOOD PRODUCTS — WATER TREATMENT — SEWAGE DISPOSAL, ETC.

★ **FOUR FORMS** ★

Marblehead Chemical Lime is used in open hearth steel manufacture as a basic flux to remove acid elements and impurities from the molten mass.

TRY A CAR NOW IN YOUR OWN PLANT

MARBLEHEAD LIME CO.

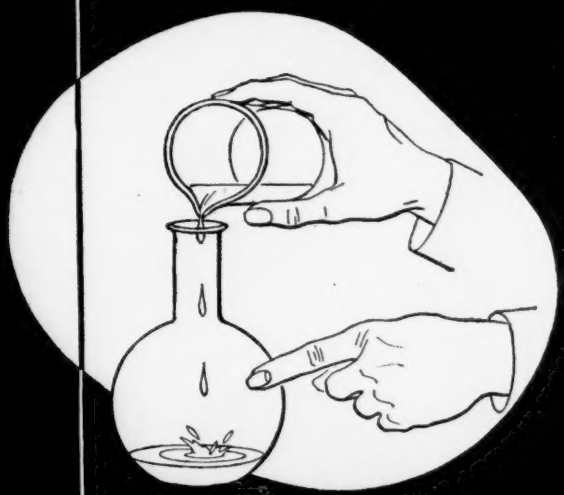
160 N. LaSalle St. Chicago, Ill.

TO SPEED VICTORY—BUY MORE WAR BONDS

VICTORY

~~History~~

in the making



Truly, in the workings of the great chemical industry in America is being fashioned the very shape of victory. For chemicals are necessary in the making of all types of materials for war . . . a fact which has served to accelerate the whole chemical industry from stern to stem.

Many chemicals are employed in the manufacture of products for war. These chemicals seldom figure in the news. They are the more commonplace bulk chemicals used daily in vast tonnages in the production of glass, rubber, textiles, flour, plastics, paper, soap, steel, oil and chemicals.

Yet, even bulk chemicals must be uniform in purity and texture or the whole process of manufacture in a score of industries is seriously impeded. That's why so many industries have learned to depend on Columbia chemicals. Whether it is soda ash, caustic soda, chlorine, bicarbonate of soda or any one of a dozen other chemicals, these industries have learned that the finished product depends for its quality on the raw materials that go into its processing.

PITTSBURGH
PLATE GLASS COMPANY
COLUMBIA CHEMICAL DIVISION
GRANT BUILDING . . . . . PITTSBURGH, PA.
Chicago · Boston · St. Louis · Pittsburgh · New York
Cincinnati · Cleveland · Minneapolis · Philadelphia · Charlotte

COLUMBIA CHEMICALS

SODA ASH · CAUSTIC SODA · LIQUID CHLORINE · SODIUM BICARBONATE · SILENE (Hydrated Calcium Silicate) · CALCIUM CHLORIDE
SODA BRIQUETTES · MODIFIED SODAS · CAUSTIC ASH · PHOSFLAKE · CALCENE (Precipitated Calcium Carbonate) · CALCIUM HYPOCHLORITE

Permanent Piping

PORCELAIN FITTINGS

The use of high-grade Wet Process Porcelain for the handling of chemicals and acids, is proving its unequalled value daily.

The use of our Chemical Porcelain pipe and fittings is very economical and permanent because it is highly vitrified, non-absorbent and practically indestructible.

It is impervious to the action of chemicals and acids with the exception of hydrofluoric.

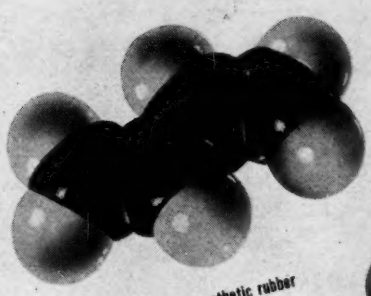
The inside and outside of all pipe is glazed white.

In the installation of our piping, we suggest the use of 1/32" thick asbestos graphite impregnated gaskets.

Get a copy of this book now. No cost or obligation. Send for it today.

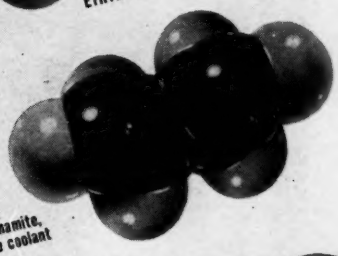
Illinois Electric Porcelain
Macomb **Illinois**

ACETONE for rayon, photo film; solvent

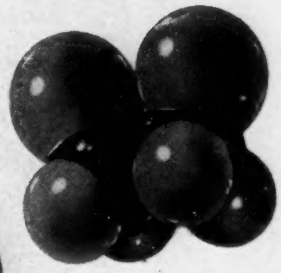


BUTADIENE for synthetic rubber

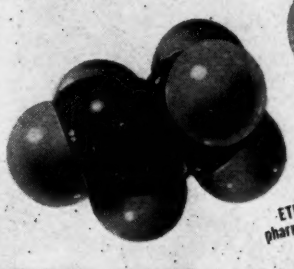
ETHYL ACETOACETATE for life-saving drugs, vitamins



ETHYLENE GLYCOL for dynamite, anti-freeze, aircraft engine coolant



ETHYLENE DICHLORIDE for vitamins, anti-knock fluid, plastics, insecticides



ETHYL ALCOHOL for lacquers, pharmaceuticals, smokeless powder

Molecular Keys To A New World

VAST NEW SOURCES of raw materials . . . the equivalent of those which might be found in a great new continent . . . opened to America when CARBIDE AND CARBON CHEMICALS CORPORATION started building synthetic chemicals from water, salt, air, and hydrocarbons.

These chemicals are usually water-white liquids, although some are gases or solids. Basically, they are compounds of carbon and hydrogen—the atoms of which are united with oxygen or with chlorine to build up an endless series of chemicals. The models of those molecules of chemicals shown here are many millions of times actual size.

These chemicals are the raw materials for fabulous plastics . . . amazing textile fibers . . . life-saving drugs . . . vitamins by the carload . . . synthetic rubber . . . more things and better things than were possible before their existence.

Since these chemical wonders are obtained from abundant domestic sources, their use has contributed materially to the nation's self-sufficiency. Through research, American ingenuity, and patient development, scarce natural products have been duplicated or improved upon. Great new industries and great new materials that contribute to the nation's strength have come into being. And America has become a leader in a field as native as its own soil.

Broadly speaking, the uses of many of the synthetic organic chemicals developed by CARBIDE AND CARBON CHEMICALS CORPORATION are just beginning. The already established uses are indicative of their vast future values to mankind.

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MAN-MADE! All types of synthetic rubber require synthetic organic chemicals for their manufacture. Here's hope for tires for you in the future.

COLD PROOF! Coolant for liquid-cooled aircraft engines and base for anti-freeze in military cars and trucks is ethylene glycol, an important synthetic chemical.

MAGIC PLASTICS! Wonderful plastics that look like glass, stretch like rubber, and which are proof against water, sunlight, oils, and many chemicals are made from VINYLITE synthetic resins.

BETTER MEDICINES! Amazing medicines like the sulfa drugs, synthetic vitamins, powerful insect repellents, and anti-malarial drugs depend upon synthetic organic chemistry.

For information concerning the use of these chemicals, address:

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Unit of Union Carbide and Carbon Corporation

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PURITY: Ninety per cent minimum.

BOILING POINT: Approximately 335°C.

FREEZING POINT: 103°C. maximum.

SOLUBILITY: Insoluble in water, soluble in alcohol, and very soluble in most common solvents including benzene, carbon bisulfide, carbon tetrachloride, ether, acetone, solvent naphtha and pyridine bases.

USES: An intermediate in dyes, phenanthraquinone, paints, fungicide, insecticide, pyrotechnics, drugs.

SHIPPING CONTAINERS: 180-lb. (approximate) barrels.

A Dependable Source of Supply for All Coal Tar Products

With unusual production and delivery facilities, plants in 17 strategic locations, and offices in major cities, Reilly offers a complete line of coal tar bases, acids, oils, chemicals and intermediates. Booklet describing all of these products will be mailed on request.

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Executive Offices: Merchants Bank Building, Indianapolis, Indiana

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Double-header

REMEMBER JANUS, the old Roman deity who could see both ways at once?

When Rome was at peace, his temple was closed. But in time of *war*, worshippers flocked to his altar . . . for even the ancients realized the importance of super-vision during days of upheaval.

Many a man of the modern world wishes he had two pairs of eyes. One to focus on the major problem of producing for the nation's urgent and immediate needs. The other, a "far-sighted" set for looking ahead to the future.

If you are one who wants to watch *all* directions, Wyandotte may well be helpful. Working with over 50 industries . . . Wyandotte men are an observation squadron of "what's going on" and "*what's coming.*"

In the Wyandotte laboratories, too, research goes forward on the requirements of industry . . . present and prospective. The findings of these technicians, plus practical Wyandotte skill, are as ever yours to use.

• Wyandotte Chemicals Corporation consolidates the resources and facilities of Michigan Alkali Company and The J. B. Ford Company to better serve the nation's war and post-war needs.

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A RADIO PROGRAM OF VITAL IMPORTANCE TO

— The Nation
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Here's Why: It is a program dedicated to Victory . . . through better public understanding of rationing and regulation . . . through higher morale on the home front.

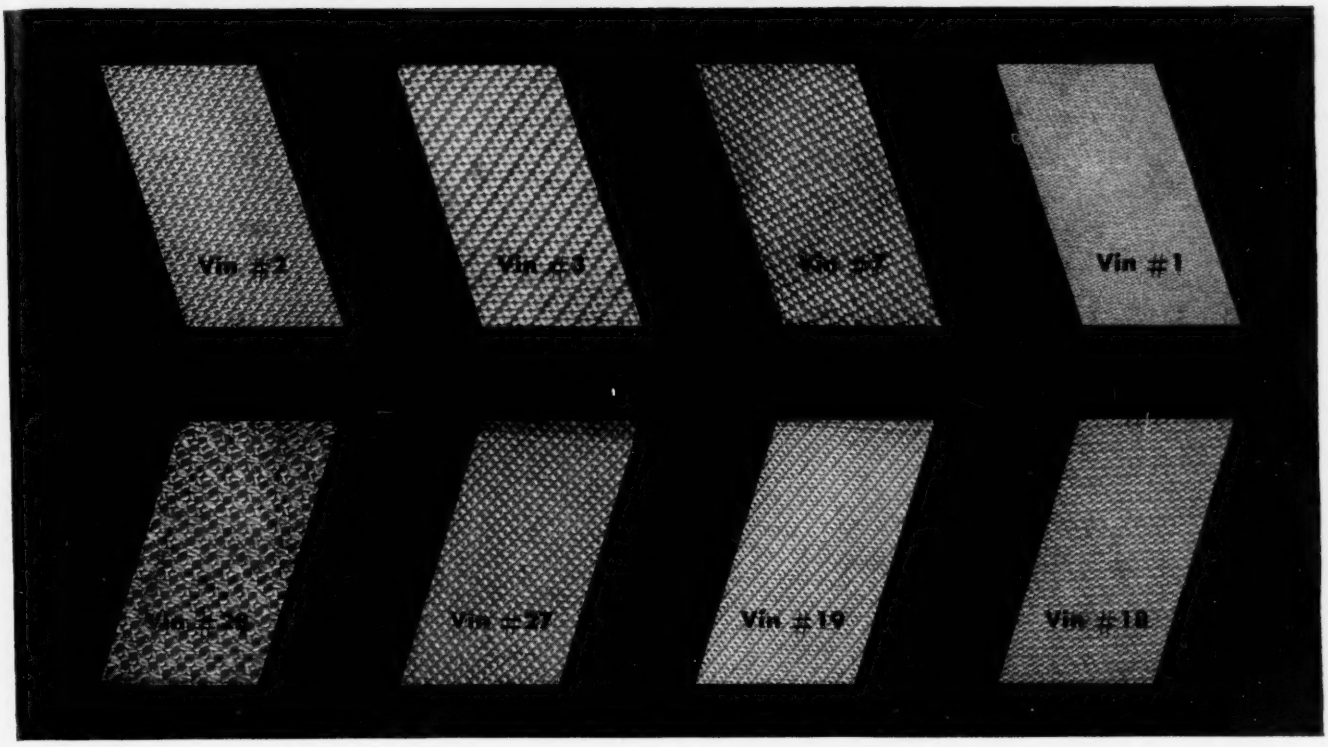
It will explain why rationing will help win the war . . . why many products not rationed are often scarce . . . why wartime changes in package and even product are necessary.

It will give Mrs. America appreciation of the tough job manufacturers and retailers have today in keeping her daily needs supplied.

It will bring from Washington news of all rulings affecting her family's life, with practical suggestions on how to make the best of it . . . how to help bring V-day nearer.

Do you know about...

*Vinyon** Fiber Filter Fabrics?



Studies of many industrial applications of Vinyon fiber filter fabrics have given us much valuable performance data which can be of help to you in the solution of filtration problems arising out of the presence of strong mineral acid or alkali in filtering operations.

Subject always to certain heat limitations, the use of Vinyon fiber filter fabrics offers definite advantages in filtration processes involving strong mineral acid or alkali solutions because Vinyon fiber is a synthetic product highly resistant to mineral acids and alkalis.

If you have the problem of obtaining suitable filter fabrics for any of the following, please check and return to us with information regarding your particular filtration process.

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Metallurgical Processes
Pharmaceuticals
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Please address inquiries to our New York Office.

* Reg. Trade Mark C. & C. C. C.

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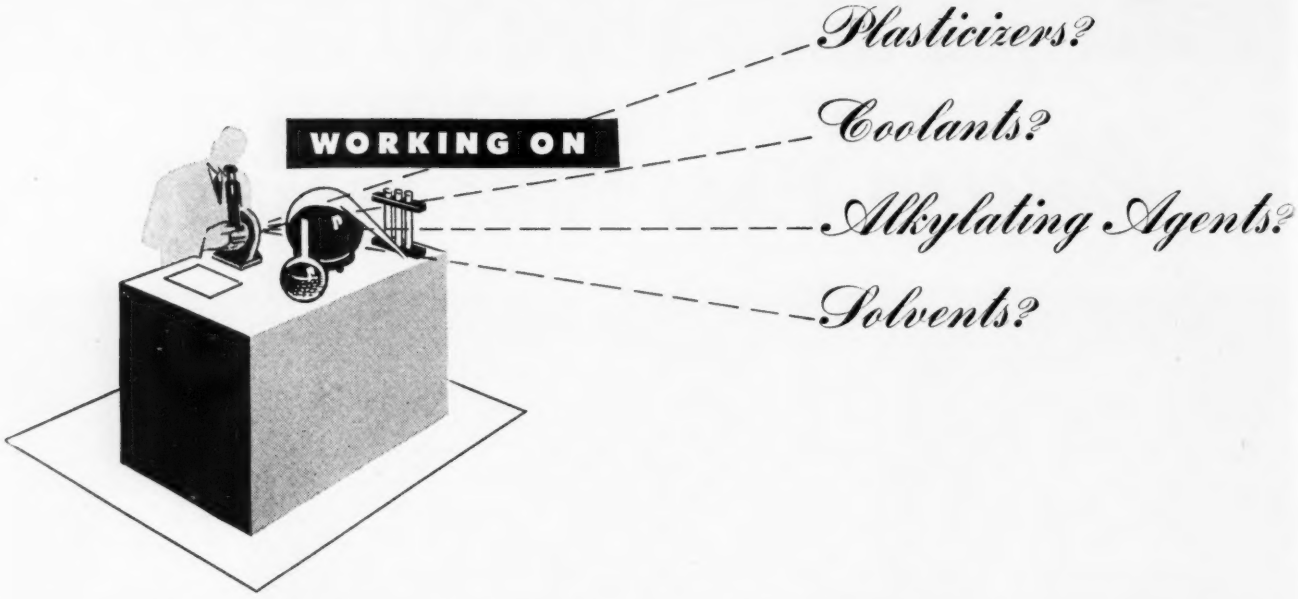


THIS NEW SERIES OF ORGANIC PHOSPHORUS COMPOUNDS MAY PROVE HELPFUL . . . . .

Here is a new series of organic phosphorus compounds that may prove helpful in the applications indicated above. Properties . . . tabulated below . . . have recently been determined by Victor Research Chemists. Perhaps one of these compounds may meet your exact requirements.

Because of present limitations in the supply of certain critical materials, samples of these and other Victor Research Chemicals announced from time to time, are not always available. Those that are will be sent promptly upon request. Some of the Victor Phosphorus Compounds . . . for which research has established important uses in essential war production . . . are already available in commercial quantities.

VICTOR TRIALKYL PHOSPHATES

R_3PO_4

SPECIFICATIONS AND PROPERTIES

COMPOUND	Sp. Gr. at 25° C	Boiling Range at 20 mm.	Melting Point °C	Titn *	Flash Point	SOLUBILITY **						
						A†	B†	C†	D†	E†	F†	G†
Trimethyl Phosphate	1.217	85-90°C	—45°	<0.1	>350°F	S	S	S	S	S	S	I
Tri-n-propyl Phosphate	1.012	135-140°C	Fluid at —80°	<0.1	>300°F	I	S	S	S	S	S	S
Tri-n-amyl Phosphate	0.947	195-200°C	Viscous at —80°	<0.5	>300°F	I	S	S	S	S	S	S
Trioctyl Phosphate	0.930	—	Very viscous at —80°	—	>300°F	I	S	S	S	S	S	S

*cc 0.1 N NaOH/10 cc sample

** S = soluble; I = insoluble.

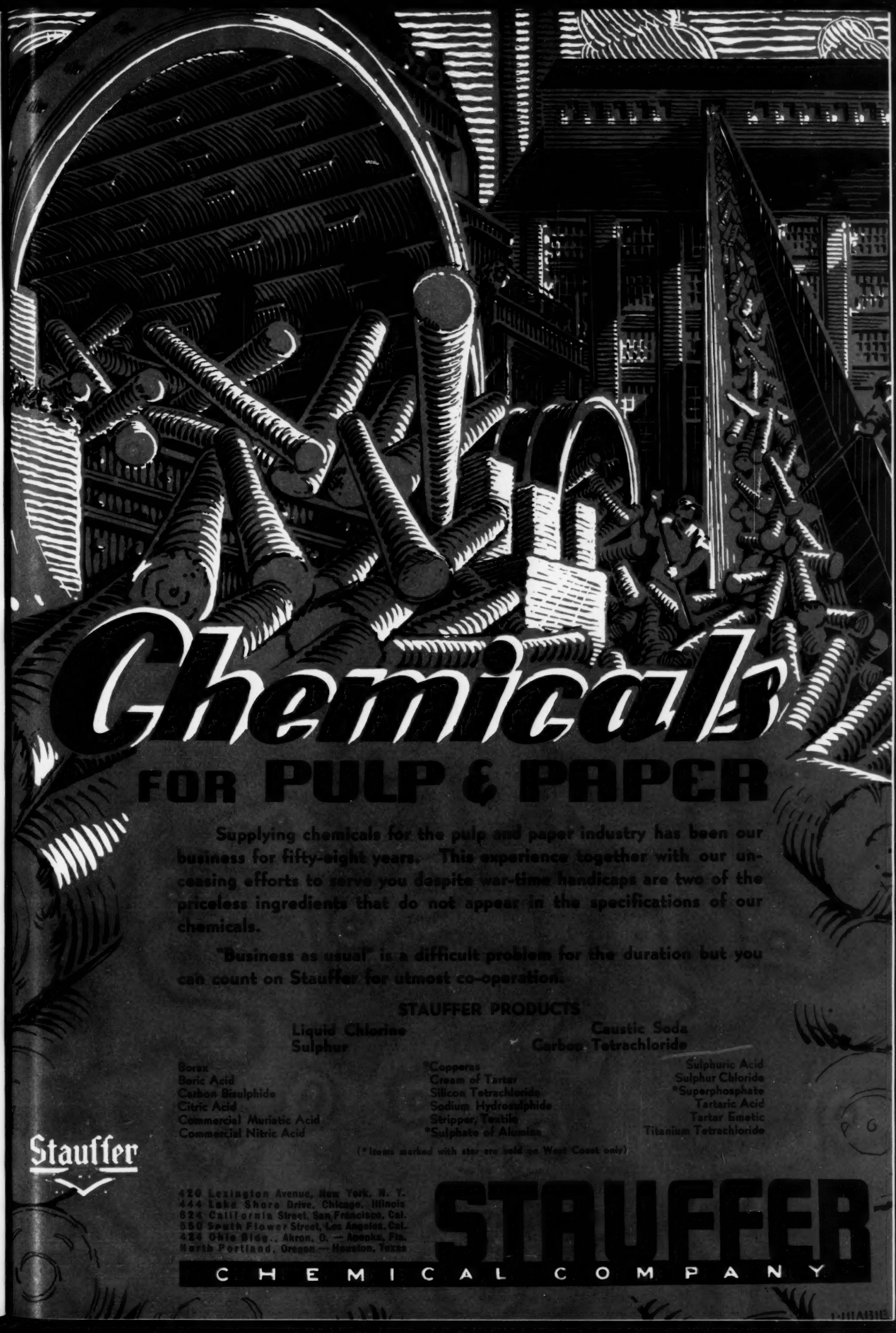
A†—Water, B†—Alcohol, C†—Acetone, D†—Ether, E†—Toluene, F†—CCl_4, G†—Naphtha.

ARMY E NAVY

VICTOR *Chemical Works*

HEADQUARTERS FOR PHOSPHATES • FORMATES • OXALATES

141 W. JACKSON BLVD., CHICAGO, ILL., NEW YORK, N. Y., KANSAS CITY, MO., ST. LOUIS, MO., NASHVILLE, TENN., GREENSBORO, N. C. PLANTS: NASHVILLE, TENN., MT. PLEASANT, TENN., CHICAGO HEIGHTS, ILL.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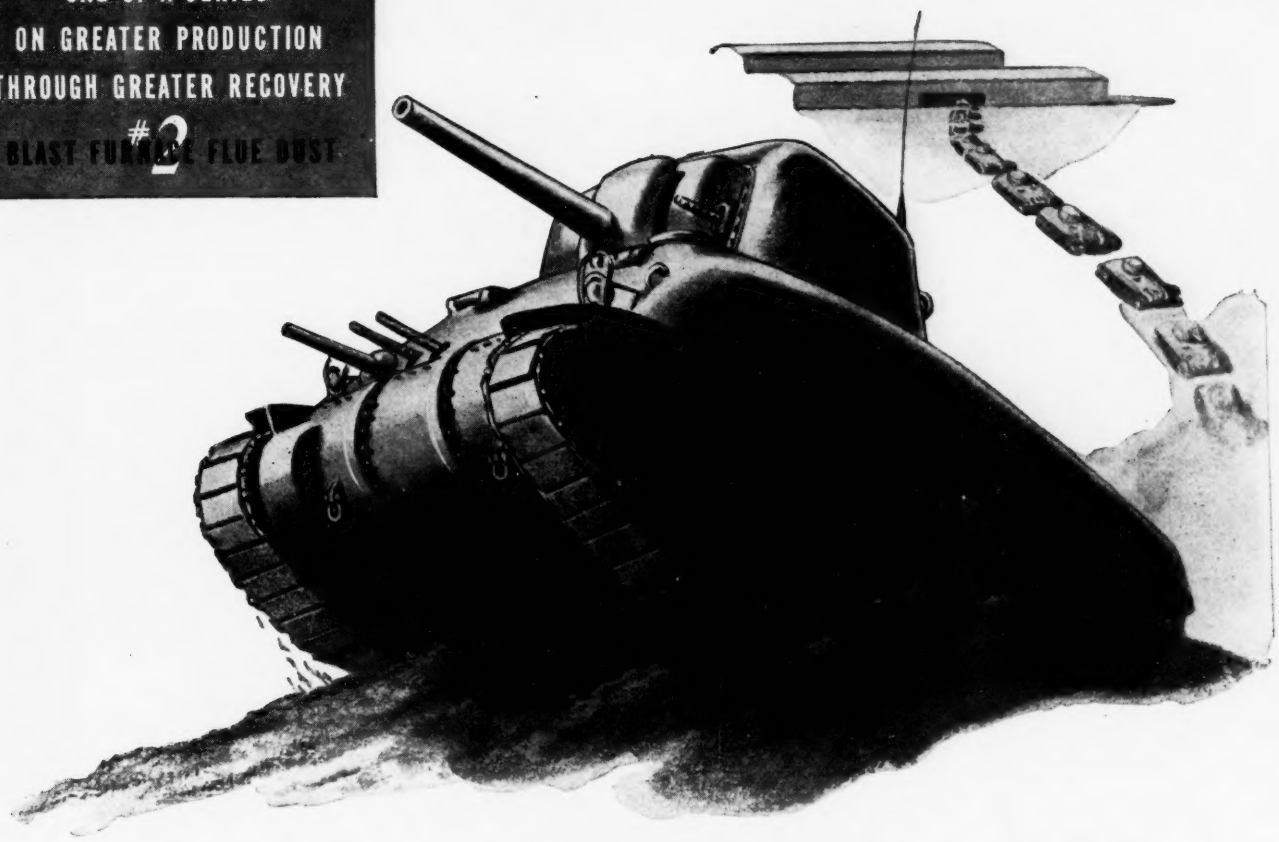
ONE OF A SERIES
ON GREATER PRODUCTION
THROUGH GREATER RECOVERY
#2
BLAST FURNACE FLUE DUST



90 STEEL MONSTERS A DAY

from blast furnace flue dust

The blast of wind that tears into a blast-furnace charge to promote combustion carries away fine particles of ore in the form of iron oxide. These, in turn, are trapped by scrubbers—wet sprays that literally knock the dust out of the flue-gas.

Tons of potential steel... hidden in tons of dirty water!

Part of the accessory equipment of modern blast-furnaces are Dorr Thickeners that recover this steel-to-be... continuously and mechanically separate it from the scrubber water. Result: 2200 tons of steel *per day* recovered from flue dust... enough to build 90 medium tanks *every day!*

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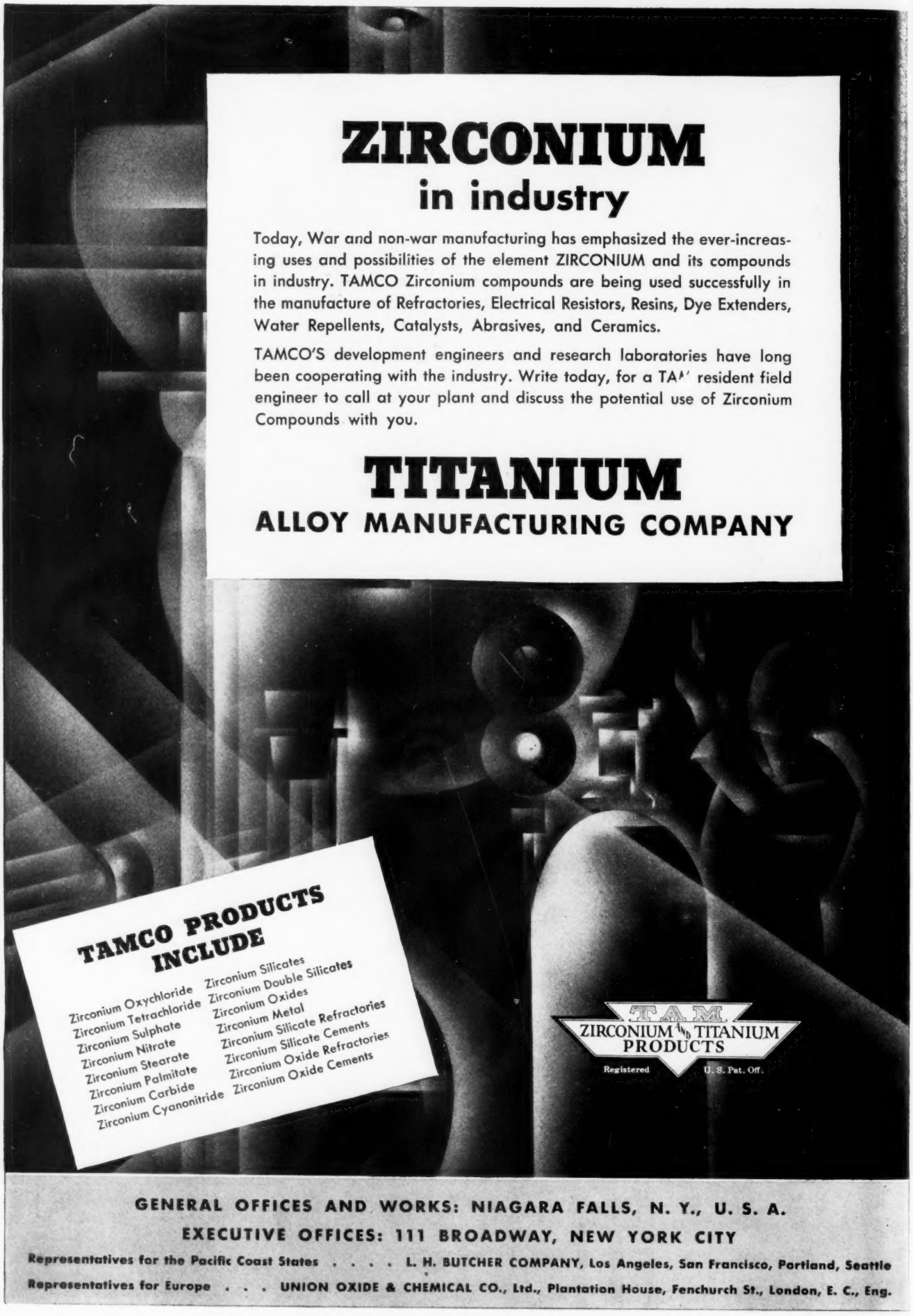

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Today, War and non-war manufacturing has emphasized the ever-increasing uses and possibilities of the element ZIRCONIUM and its compounds in industry. TAMCO Zirconium compounds are being used successfully in the manufacture of Refractories, Electrical Resistors, Resins, Dye Extenders, Water Repellents, Catalysts, Abrasives, and Ceramics.

TAMCO'S development engineers and research laboratories have long been cooperating with the industry. Write today, for a TAM resident field engineer to call at your plant and discuss the potential use of Zirconium Compounds with you.

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The enemies of a machine gun bullet are slam-bang handling, dirt, and —very dangerous—moisture. Corroded bullets jam guns. It takes cans to keep machine-gun *and* rifle bullets safe and dry.

America's favorite container is the bodyguard of countless war supplies. It's helping to protect fighting men, keeping them alive and well. Food, fuel, medicines—all the things you get in cans—are also going to war in cans. And they're getting there—*safe*—because cans are tough!

Remember this when you can't buy all the products you used to get in cans. Remember, too, that the cans of peace will be better cans—thanks to our experience as wartime "Packaging Headquarters for America."

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Metal containers are delivering the goods *safely*—foods, supplies, and bullets arrive ready for action. Continental is making millions of these cans along with other needs, including plane parts.

Yet, rushed as we are, we can still take on more! Right now, a part of our vast metal-working facilities for forming, stamping, machining and assembly is still available. Write or phone our War Products Council, 100 East 42nd Street, New York.

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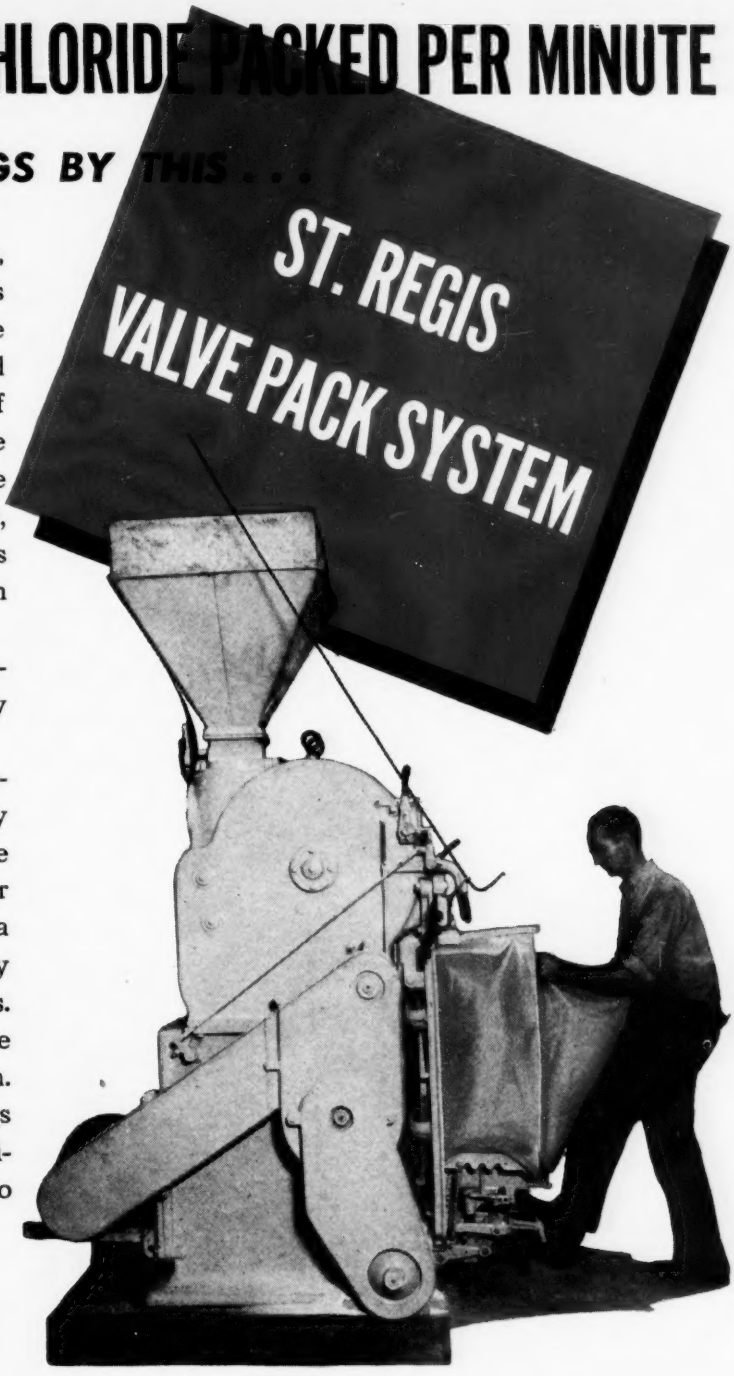
600 LBS. OF CALCIUM CHLORIDE PACKED PER MINUTE

IN MULTIWALL PAPER BAGS BY THIS . . .



As easily as you shift gears in your automobile, an operator moves the levers of a St. Regis Packer and packs 600 lbs. of Calcium Chloride per minute in Multiwall Valve Bags. Such rapid production is due to the self-closing feature of the Valve Bag, the speed of the Packer, and the fact that the operator does not have to lift the filled bags. St. Regis Bags are strong and tough, and the incorporation of special sheets protects this hygroscopic and deliquescent product in transit and storage.

Calcium Chloride is but one of the 67 chemical products now being packed in sturdy St. Regis Paper Bags.

Free-flowing products are packed economically in Valve Bags with the St. Regis Gravity Type Packer which is a simple, inexpensive unit. Open-mouth bags, closed by sewing or wire ties, are available also, so that there is a St. Regis Packaging System for every company shipping in 25 to 100 lb. units in paper bags.

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St. Regis Multiwall Bags are made with multiple independent walls of sturdy kraft paper. They are astoundingly strong, moisture-resistant, and impervious to dust, dirt, or insects. No sifting, clean to handle and store, and they stack well.

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Nacconol NR—the economical surface-active detergent—is now on active duty with the Navy. Lathering freely and washing efficiently in salt water, Nacconol NR materially reduces the amount of fresh-water storage . . . makes spotless housekeeping aboard our fighting ships less burdensome for he-men.

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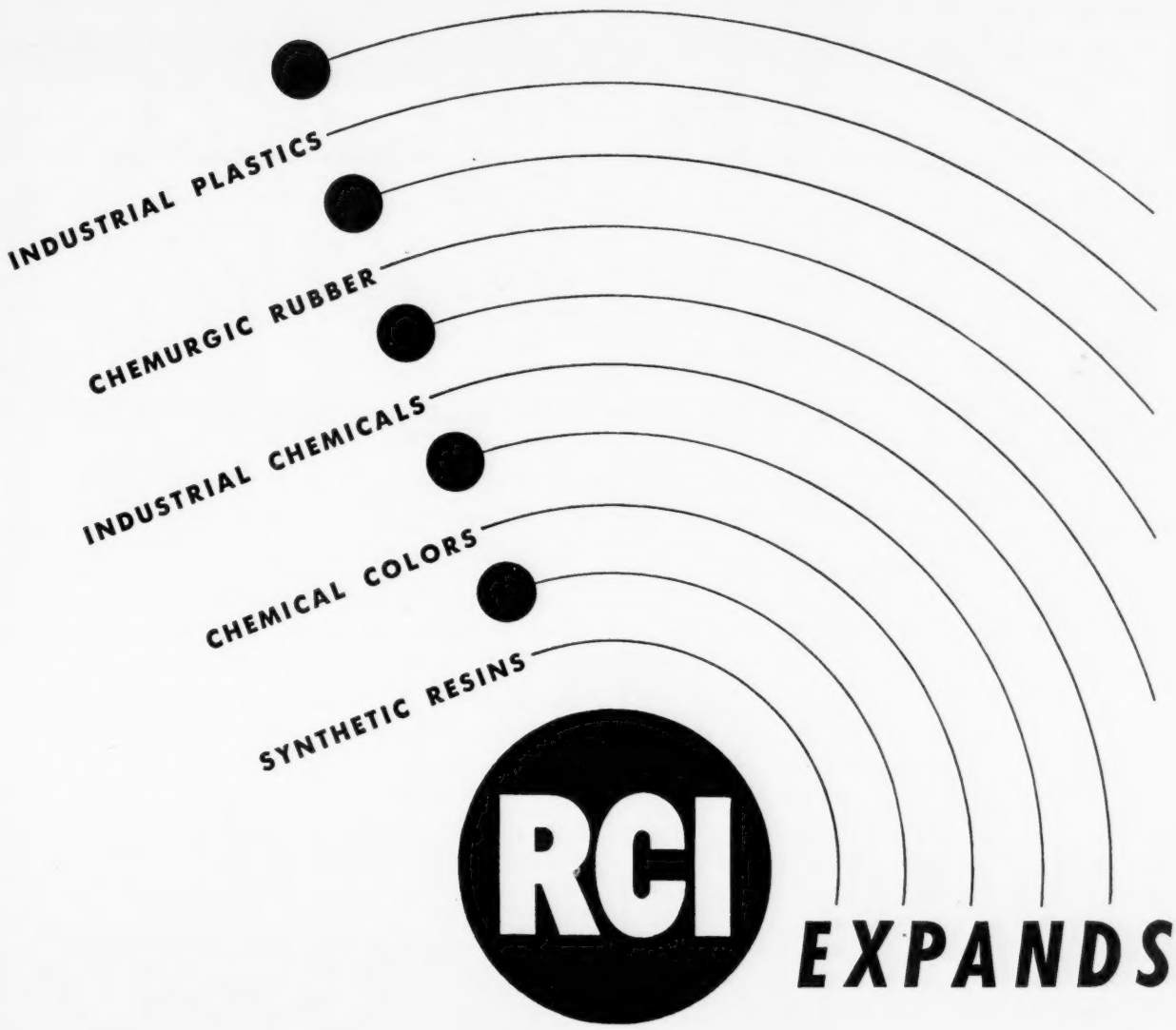

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Reichhold Chemicals, Incorporated—long the leading American producer of synthetic resins for surface coatings—has kept in step with the needs of national security since well before Pearl Harbor.

Out of RCI's growing chain of plants come glycerine, phenol, plasticizers and many other basic industrial chemicals. RCI experience and extensive research facilities have aided in producing superior surface coverings for ships and armament . . . a better camouflage paint . . . synthetic rubber from farm products . . . a really effective flame-proofing resin . . . new laminating resins, and other timely chemical advancements now saving armament, critical materials and lives all over the world.

The reason for this steady rise in size and usefulness will interest every organization in whose progress chemical advancement plays a part. For RCI's growth is based on unremitting research—pointed as much at the improvement of existing chemical aids to industry as to the development of new products. The extensive research facilities created to sustain this program are available to manufacturers in every field.

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IN many and varied ways Natural Bichromates are helping Uncle Sam deliver the knock-out punch. Chrome solutions are retarding corrosion from the aluminum wings of our planes, the cooling systems of engines, and the casings of cartridges and shells. Chrome tanning makes softer and stronger leather for Service shoes, while bichromates used as a mordant preserve the color of Army uniforms. In paints and in glass, chrome colors are indispensable.

These are some of the reasons why present stocks of NATURAL BICHROMATES are low. But when peace comes to America again, not only the material but a rich experience gained in war production will be at your service in abundance.

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BUY CROW-MATES

May the Rainbow Be Rediscovered

EDITORIAL

Robert L. Taylor, Editor

"The persistent individual, if he follows natural laws, will invariably succeed." This was the text of the 1943 Chandler lecture "Rediscover the Rainbow," presented at Columbia University in May by Willard H. Dow, president and general manager of the Dow Chemical Company. Dr. Dow received the Chandler Medal this year for distinguished service in science.

Only last month reference was made on these pages to the effect that behind every great material achievement there has been a motivating and guiding philosophy. If Dr. Dow's statement expresses the philosophy underlying the development of the Dow Chemical Company it is not difficult to see why this company is one of our leading American chemical producers.

The truth of Dr. Dow's statement is so simple and obvious that it is frequently overlooked, and success seems a more distant and complexly arrived-at thing than it is. Yet if but conscientiously applied, the formula seldom fails. And then usually because of faulty application rather than any flaw in the axiom itself.

In few places has it been better applied than in the Dow organization. Magnesium is a good example. There are ample quantities of magnesium in the earth's crust, but it is always found in a combined state such as dolomite in limestone, or magnesium chloride in brine and sea water. Fuel costs or transportation charges are usually fairly high in localities where dolomite is found. Natural laws therefore quickly resolved the problem of large-scale magnesium production into one of comparing the cost of mining rock with that of pumping ocean water. As is well known, ocean water was selected.

Development of this magnesium-from-sea-water process afforded still another good example of nature's elements in small quantities laying down a definite rule of operation. When the sea water plant was first started it was found necessary to make some radical changes in order to prevent the concentration of boronate from becoming too great in the electrolytic cells. Boron has the property in this electrolysis of being an active agent capable of reducing the yield of magnesium to practically nothing. It therefore had to be controlled. This was accomplished partly by removal and partly by leaving the iron and manganese, naturally present, to inhibit the activity of the boron. The whole problem was solved purely and simply by following natural laws.

Is there not a lesson to be learned—or perhaps taught—here, in the similar application of natural laws to business and living? How long will it take our law makers to realize that natural laws must govern just as surely in running a society or economy as in running a magnesium process—that to the extent that natural laws are ignored or rebuffed the mechanism will operate with decreasing efficiency until it stops altogether.

Surely there is nothing complicated about this. The reasoning is simple. Yet many people in this nation today are still too blinded by chimerical schemes of one sort or another to see it.

There can be no backing away, no hiding of heads in sand or rosy theories. The end of the war will unleash a deluge of social and economic problems the like of which this nation has never seen. There will be debt financing, disposition of war plants, disposition of war surpluses, the spectre of unemployment, racial problems, all in addition to the complicated job of determining and administering a foreign policy with respect to both our allies and the defeated nations.

No such task as will confront the nation then can be successfully accomplished without recognition of the supremacy of natural laws, without recognizing that the only road to lasting accomplishment is through working in harmony with physical, economic and social laws and not against them.

Can there be any more important thing that we, as members of an industry that has dynamically demonstrated the supremacy of natural laws, can do than to use our influence at every opportunity to see that natural laws are given the consideration they must have if our nation is to prosper?

"Those nations who follow nature's laws most closely are bound to become supreme—supreme in their modesty, supreme in their honesty and humble before nature's altar."

May Dr. Dow's rainbow be rediscovered.

Drum Deposits: When letters, pleas and telephone calls fail to get back returnable drums, there is always a temptation to raise deposit rates in an effort to provide extra economic incentive for prompt return.

Any manufacturer resorting to this procedure should be aware of the dangers involved. In the first place, it is doubtful if the practice will result in any appreciable increase in number of containers returned. That is the report of those who have tried it.

Secondly, it will invariably build up accounts receivable to an inflated level which does not represent the true worth of the drums. The owner will find that his drums will come back for credit after the war in a condition fit only for the junk pile, with the result that they will have to be written off the books as pure loss.

All things taken into consideration, overvaluation is not recommended as a method of stimulating return of containers.

It's the Job That Counts: Local draft boards and others have commented recently that many employers in filling out Form 42a for occupational deferment of essential employees have been placing too much emphasis on the essentiality of the product and industry and not enough on the man.

One case was cited where an employer went to great length to tell about the importance to the war effort of a particular article on which a deferment applicant was working, only to omit entirely any explanation of the job the applicant performed. Under such circumstances a draft board is left no alternative but to shake its head and say "no." Complete information on the individual and his specific job is the first essential in filling out deferment forms. If the application falls down in this respect it is automatically stopped.

Don't Neglect Inventories: A warning of importance to all chemical producers was issued by one of the officials of WPB at a recent chemical association meeting.

This official, stating that transportation facilities will get worse before the end of the war despite all efforts to the contrary by ODT and the carriers themselves, recommended that stocks of critical materials at manufacturing plants be kept at maximum allowable levels wherever possible in anticipation of the slower transportation schedules and increased delays due to waiting for carriers that are almost certain to occur next winter.

Whether for patriotic or other reasons, some chemical plants have been operating on as low as two or three days' inventories of critical materials. This will become increasingly dangerous if the above situation materializes. Cases have already been reported where urgently needed materials were available but could not be had because there was no way to move them.

It would seem good policy, therefore, for producers to look ahead and begin now to build up raw material inventories to at least a couple of weeks wherever possible. Obviously this can't be done in many cases where materials are under allocation or where there are serious shortages. However, wherever it is not certain that this is the case, effort spent now on building up reasonable working inventories may eliminate much future grief for manufacturers and the country alike. WPB has indicated that it will be glad to work with producers toward this end as far as possible.

Rubber Program: In Progress Report No. 3 by the Rubber Director we are beginning to see substantial evidence that the synthetic rubber program is really beginning to roll. As contrasted with about 40,000 tons capacity in September 1942 when the Office of the Rubber Director was created, the report states that synthetic rubber plants with an annual capacity of 252,000 tons are now in operation or ready for operation. This approaches the estimated military requirement of 286,000 tons for 1943.

The part played by chemical industry in this good performance to date is praiseworthy. However, the critical months are still ahead. With stockpiles rapidly dwindling, new plants must be completed and brought into full operation without any let-up whatever if a final squeeze is to be averted. If the rubber program comes through on schedule it will go down in history as one of the great industrial accomplishments of all time.

For Users of Drums: The Chemicals and Containers Divisions of the War Production Board have jointly offered a list of suggestions to users for returning drums. Chemical manufacturers may find this of value in writing to customers.

The list is as follows:

1. Have your supplier pick up your empty drums when delivering full drums, or return empty drums to the works or warehouse from which received.
2. Deposit charge will be refunded upon receipt of drums in good condition.
3. Do not use pressure on empty drums.
4. Drums should be kept clean, but do not rinse.
5. Do not use for storage or shipment of any other material.
6. In returning drums, replace and securely tighten both bungs.
7. In returning open-head drums, do not interchange lids or lever locks. Be sure to return lock with drum.
8. Use proper size valves in order to prevent stripping of threads.
9. Do not tighten bung plugs excessively as this may rupture flange threads or loosen the spud which would ruin the drum.
10. Use faucet or spigot provided with straight threads equipped with resilient gaskets. Faucets equipped with tapered threads may turn the spud in the drum, thereby causing leaks, with the possibility of ruining the drum.
11. If possible, store drums under cover to prevent rusting.

CONSERVATION CONSULTANTS

The War Production Board's Conservation Division — What It Is and What It Does

By *A. Kenneth Graham*
Conservation Division
War Production Board

THE Conservation Division of the War Production Board, under the direction of Howard Coonley, is a most unique scientific group. Out of a total personnel of 95, there are 36 engineers, 12 chemists, 9 metallurgists, 13 technicians, 5 architects and 14 business experts. Sixty-four are graduates of technical colleges or universities. Their years of practical experience average 20. The personnel includes specialists on all materials comprising ferrous and non-ferrous metals, and the non-metals, such as wood, rubber, leather, textiles, plastics, clay products and chemicals, as well as specialists on many end products.

The group serve as consultants on all matters pertaining to simplification, specifications, substitution and conservation through reduction in use. This service is rendered to all Divisions of the War Production Board, the Army, Navy, other governmental agencies, and to private industry. The members are also serving on numerous War Production Board, inter-agency, industry and scientific committees, dealing with technical and conservation matters.

Problems Changing

The character of production problems handled by the Division has changed within the last few months. Originally the prime problem was to alleviate shortages in raw materials. This was greatly augmented by the periodical issuing of a "Materials Substitution and Supply List" prepared by the Conservation Division. Due to end-product curtailment and increased facilities, these material shortages have been reduced. Consequently, the problems today are no longer dominated by materials alone, but equally, if not to a greater extent, by manpower, electric power and transportation. The responsibility of the staff of the Conservation Division, therefore, is to make over-all surveys for the purpose of conserving these items. These surveys are presented to the other Divisions of the War Production Board and to the other war agencies in the form of recommendations. If these recommendations are adopted, the Conservation Division assists in implementing their provisions and promoting their effectiveness.

Description of Activities

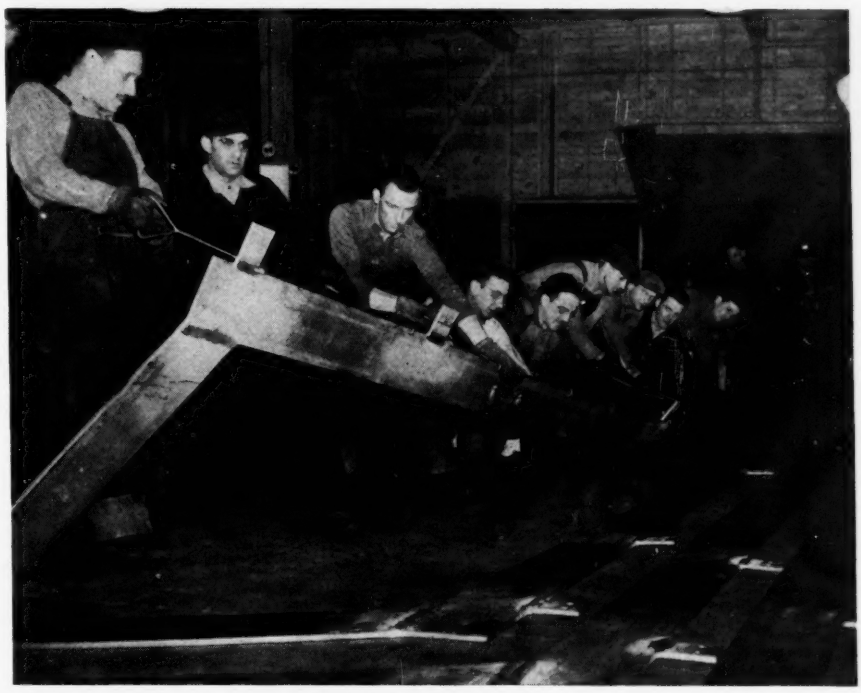
Many of the activities of the Conservation Division are so closely related to the war effort, that they cannot be discussed. However, a few examples can be cited which will illustrate the manner in which these activities tie in with industry and the general public:

Within the last three months glycerine has become very critical, due to increased requirements for explosives for our allies. A major substitution has been accomplished in those uses for which glycerine had normally been considered essential, by bringing in additional capacity for the glycols and by installing them as glycerine substitutes.

With the increased demand for alcohol, glycerine and ethylene glycol for war use, a shortage of these anti-freeze ingredients developed. The sales of other preparations, involving inorganic salts and petroleum distillates which are highly corrosive, increased. The Conservation Division was instrumental in the issuance of an order to prevent the manufacture of these corrosive anti-freeze compounds. Through a campaign asking the public to re-use their present solutions of the permanent type of ethylene glycol anti-freeze, a potential saving of 12,000,000 gallons a year of this important chemical is anticipated.

About a year ago, synthetic resins, imported resins, and several types of drying oils became difficult to obtain. At that time the Conservation Division encouraged the substitution of water base paints for oil base for resin fin-

The Conservation Division has succeeded in releasing tons of government owned silver for use as electrical conductors in the electrochemical industries as a substitute for copper. The silver bus bars below are for a magnesium plant.



ishes. Similarly, phenolic adhesives for plywood and other purposes came into short supply. This Division urged the use of casein adhesives wherever possible. These water paints and adhesives today are being used in increasing extent, in order to replace the more critical alternatives.

Action on Metals

The manufacture of tableware formerly consumed large quantities of nickel silver, a copper nickel zinc alloy. The great demand for these metals for war purposes made it necessary to prohibit their use in the manufacture of this item. Specifications for plated steel tableware were developed by the Conservation Division in collaboration with the manufacturers. At the same time the support of the Army and Navy was obtained in establishing a research project under the National Defense Research Committee to further evaluate various plated coatings for tableware for both civilian and potential military applications. The project committee is comprised of technical representatives from the Battelle Memorial Institute, the U. S. Bureau of Standards, the University of Pennsylvania, and the research organizations of two industrial concerns. A large tableware manufacturer has accepted the contract to prepare the necessary test lots of samples. Other technical representatives of the Conservation Division of the War Production Board, the Army, Navy and the U. S. Bureau of Standards are serving as an advisory committee to the project committee, and it is through this latter group that the facilities of the Army and Navy are made available for field tests.

Silver has been accumulated by the United States Treasury over a period of years. The consultants of the Conservation Division, through their knowledge of the properties of silver, the relative availability of silver with respect to other critical metals, and their intimate knowledge of the specific requirements of certain electrochemical plants, have succeeded in releasing tons of government owned silver on a loan basis for use as electrical conductors in the electrochemical industries as a substitute for copper. Before an installation is possible, a survey must be made in order to determine that the requirements are of sufficient magnitude to justify the elaborate provisions for guarding the silver, in accordance with the requirements of the government.

An investigation of the properties of silver clad steel cables as a possible substitute for the more critical aluminum steel clad product has also been initiated by this Division.

Lead Least Critical

Lead is the least critical of our common non-ferrous metals, and in these times of metal shortages its use should be extended. Although lead has been used to a limited extent in the past as a corrosion resistant coating for steel, both as electrodeposited and hot dipped (alloy) coatings, it has never enjoyed widespread adoption, due largely to the fact that zinc and cadmium were readily available.

The Conservation Division in approaching this problem made a preliminary investigation of the available data through the research organizations of industrial concerns, and concluded that the value of the coating was sufficiently promising to warrant more extensive use at this time. A formal request for a project to obtain further data, and to investigate potential applications, has been made by the Division. A large number of industries are expected to participate in this undertaking.

Tin from Secondary Metals

The use of terneplate has been curtailed in order to save both tin and steel, and the allowable maximum tin content has been reduced. In the recovery of secondary lead alloys, a substantial quantity of secondary metals containing not over 2½% tin has accumulated. Since it is both difficult and impractical to refine this alloy to recover the small tin content, its use has now been encouraged for hot dipped coatings. It was necessary to revise the order limiting the use of such coatings, in order to accomplish this, and at the same time to develop a source of lead coated sheets using this composition. As a result of the efforts of the consultants of the Conservation Division, and with the cooperation of certain steel companies, lead coated sheets of this type are now being produced and are available as a substitute for those galvanized sheet steel applications in which lead can adequately serve. As further experience with specific applications is obtained, the information will be made available to industry.

The research and development organizations of industry are the foundation of most scientific achievement and technological advances in this country, although the contributions of individuals, colleges, universities and government laboratories are of great importance. The war agencies are integrating these sources of talent and facilities in a most effective manner. However, most of the present day scientific endeavor is hampered by a technical manpower shortage. An indication of the shortage throughout the united nations is the extent to which the scientific personnel of the Conservation Division is being used by the Army, Navy, Bureau of Economic Warfare, Lend-Lease and other agencies, including both the Canadian and British Governments.

Casein adhesives for plywood to relieve shortages of the phenolic resin type adhesives was urged by the Conservation Division and are now being used to an increasing extent. The photograph below shows the way in which alternate sheets of wood and resin adhesive are built up for pressing into plywood.

Resinous Products and Chemical Co.

Condensed from a paper presented before the National Wartime Conference, New York City, May 9, 1943.

An Industry Comment on "Technical Manpower and Selective Service"

By *R. B. Semple*, Monsanto Chemical Co.

One of industry's recruiters of technical personnel comments on Dr. A. B. Newman's May article.

DR. NEWMAN is signally correct in emphasizing to industrial concerns the importance of closely following the manpower picture and using the resources of the Selective Service system to keep necessary men on the job. With the only appreciable source of net replacements or additions being the college graduating classes, and with the prospects that even this source will progressively decline as the war goes on, it behooves every concern to do its utmost to retain men where they can do the most useful job. The retention of *experience* is perhaps the most important point of all, for the ability to exercise independent judgment and accept supervisory responsibility generally develops in a college graduate only after several years of industrial activity.

It seems difficult for many organizations to realize how much time and thought must be given to Selective Service matters. A coordinated program is most desirable and necessary, hence justified. To at least one person in each company should be delegated the responsibility of understanding the law in detail, to follow all new developments and to act as a consultant to iron out the many knotty problems that arise. Selective Service has provided excellent machinery for the retention of necessary men, but has not taken the responsibility from individual concerns to prove their cases; obviously, this is industry's primary obligation.

As Dr. Newman points out, Replacement Schedules and Manning Tables offer prospects of greatly simplifying Selective Service detail, after the initial effort of preparing and presenting the data required. In these plans it is necessary to work very closely with the individual state headquarters.

We have always felt it most desirable to work out any controversial occupational cases at the level of the local board if at all possible. This can be done most conveniently by requesting a rehearing before the local board before filing an appeal. This request must be made in writing within ten days after the date of reclassification, and, if granted, the appeal period is extended to ten days from the date of the hearing. Care must be taken, however, that this is clearly understood with the local board, and that the registrants' appellate rights are protected. It is, of course, necessary for a company representative to appear in person at the rehearing in order to present the basis for the occupational deferment request and answer any questions.

It would seem impossible for individual industrial companies each to understand the overall manpower situation and to carry the burden of proving the necessity of further college training. This should be more the responsibility of the trade association, the professional society, or, desirably, the government itself, all of whom have facilities to survey the broad picture. Shortage is apparent to an individual company only when it cannot recruit needed men, and obviously some concerns will be in a better position on this score than others. It must be remembered that the sophomores and juniors of today are the potential key men of six or more years hence, and while some insurance against further industrial expansion and maintenance of present staff is vital, a complete evaluation of the overall picture is exceedingly difficult.

One thing comes to mind: if technical training is stopped entirely there will be a considerable hiatus of skilled men at a time when we may conceivably need large numbers to win the peace.

McNutt Warns of Cut in Occupational Deferments

ANNOUNCING that available manpower of military age will permit only about 1,500,000 industrial deferments at the end of this year, Chairman Paul V. McNutt of the War Manpower Commission recently urged employers of the approximately 3,000,000 men now deferred for occupational reasons to cooperate for their orderly induction by filing manning tables and replacement schedules.

When an employer files a manning table and a replacement schedule, Chairman McNutt pointed out, he gives the War Manpower Commission a picture of his personnel requirements that is helpful to its entire program, together with a time table by which the Selective Service Bureau can plan its inductions. He also stated that the estimate of 1,500,000 men who can be deferred in industry as of next December 31 takes into consideration those who will become 18 before that date and also men with dependents who had been classified in former Class 3-B.

"On May 1," he said, "there were approximately 1,000,000 Selective Service registrants 18 to 38 years old in Class 2-A, as necessary men in essential civilian activities, or in Class 2-B, as key men in war production other than agriculture. There also were around 2,000,000 men with dependents who are engaged in essential activities many of whom will be reclassified into Class 2-A or Class 2-B from former Class 3-B. In addition, there will be deferments during the remainder of the year of some of the registrants who become 18 each month."

The Pulse of Opinion—

THE KILGORE BI

Pro:

By Albert P. Sachs
Consulting Chemical Engineer

THE Kilgore Bill marks an important milestone in the recognition of the place science and technology occupy in modern civilization and in the structure of the state. I believe that it is an important step toward the ultimate creation of a Department of Science and Technology whose administrative head will have Cabinet rank.

Dr. Sachs

I recognize that in taking this important, this momentous step forward, men of good will may differ about details of procedure, organization and powers to be granted. I realize that there are vested interests (and by vested interests I mean not necessarily predatory interests but merely already acquired interests) which rush intuitively into an attitude of self-defense whenever the position under the law is to be altered. I realize that many large corporations enjoying virtual monopolies either through vast financial powers or through patent pools or patent structures will resist a change in the set-up. I do not consider this as a sign of inherent viciousness on their part. We have justified the making of profits both by law and morals, and the corporate attitude springs from this legal and ethical justification. But I also believe that we are growing into a more democratic belief that national welfare is best served by establishing the greatest good for the greatest number. While we have not yet come to the point where we will consciously destroy by law the great industrial agencies, and I trust we never will, I do believe that we have concluded that it is just and moral in the national interest to control and regulate our great industries and to provide for the utilization of the national scientific and technological resources of the nation for the benefit of the nation. I believe unqualifiedly that the establishment of the Bureau of Standards, the laboratories of the Department of Agriculture, the regional laboratories, the Tennessee Valley Authority, the laboratories of the War Department, the Navy Department, the Bureau of Mines and a hundred others have all been steps in one direction, the logical terminus of which is that contemplated by the Kilgore Bill and I believe that the time for integration of all these activities has arrived.

I believe further that the law and the devices by which the nation lives and thrives are subject to improvement and evolution. We do not live for the law; the law is established to further our convenience. I believe that our patent system is due for an overhauling much more thorough than that contemplated by the Kilgore Bill; the Kilgore Bill refers only to the patents which arise from the operation of governmental agencies or from the use of governmental facilities,

Summary of the Bill

BILL S.702, also known as the Kilgore Bill and the "Science Mobilization Act", was introduced in the Senate by Harley M. Kilgore of West Virginia on February 11, 1943. It is now in the hands of the Senate Committee on Military Affairs. Its principal provisions are as follows:

1. Creation of an independent Federal Government agency to be known as the Office of Scientific and Technical Mobilization and to be headed by a $12,000-a-year administrator who shall be appointed by the President with the consent of the Senate.

2. Establishment within the Office of a National Scientific and Technical Board, consisting of the Administrator as chairman and six other members to be appointed by the President including one representative each for industry, agriculture, labor, the consuming public, and two members at large who shall be scientists or technologists, each to receive compensation of $10,000 a year. The Board and its members shall perform such duties as may be assigned to them by the Administrator.

3. Creation of a National Scientific and Technical Committee consisting of the Board, one representative for each of such Federal departments as the President shall designate, four additional representatives of the public, three additional scientists or technologists, and six additional members representing labor and six additional members representing management, to be appointed by the President and to serve without compensation as advisors to the Administrator on basic policies governing administration of the Act.

4. Powers and duties of the Office shall be (a) to maintain a national census of scientific and technical facilities, requirements and personnel; (b) to promote projects for the use of scientific facilities and personnel; (c) to promote development and application of scientific methods in the national welfare; (d) to assess scientific developments in relation to the national welfare; (e) to solicit and receive aid from any source for the advancement of scientific methods; (f) to coordinate the scientific data, methods and facilities of all agencies and departments of the Federal Government; (g) to foster international cooperation in scientific discovery and the application thereof; (h) to make available to the President, Congress and others, under such conditions as the Administrator may prescribe, technical data and guidance; (i) to review specifications, designs and production methods of military and civilian products and recommend simplifications and changes therein; (j) to use any instrument to acquire or alter real and personal property as authorized by the Act, and to enter into any transaction necessary for the performance of its duties or powers; (k) to acquire patents and patent rights; (l) to make and amend appropriate rules and regulations to carry

Here are the principal arguments for and against the much-discussed Kilgore Bill for mobilization of science and technology, also a summary of the Bill itself.

BILL

personnel or money. Every corporation provides for the ownership, use and disposition of the patents arising from the use of its facilities, personnel or money and our government should do no less for the inventions arising from the expenditure of the people's money. In addition to providing for vesting title in these patents in the appropriate government agency, specifical provision is made to compensate any one who is deprived of any property right under the workings of this law. This is equitable. If the details of the section dealing with patents require amendment I suggest that we, the large corporations and the patent attorneys, work with the Kilgore Committee or its successors to bring about meritorious modification of the proposed law—

(*Turn to next page*)

out the purposes of this Act; (m) to conduct such investigations on the use and development of scientific facilities and personnel as the Office may deem necessary.

5. The Administrator shall determine, subject to approval by the War Manpower Commission what scientific occupations or training shall carry occupational deferment from military service. Any determination respecting occupational deferment made by the Administrator under these conditions shall be conclusive upon local Selective Service boards. During a state of war and for six months thereafter, the Administrator is authorized to promulgate appropriate procedures and methods, subject to direction by the War Manpower Commission, for the training, classification, and employment of all scientific and technical personnel.

6. During a state of war the Administrator may requisition any scientific facility needed for the prosecution of the war, subject to review by the President, upon payment of fair compensation for such facility. It is provided that this requisitioning power in the case of patents shall not extend to the patent itself but shall be confined to licenses and the right to grant sub-licenses. When the Administrator determines that a requisitioned facility is no longer needed for the prosecution of the war, he shall return it to the former owner, but no such return shall be required until six months after termination of the state of war. During a state of war the Administrator is authorized to investigate any scientific facility with a view to evaluating its efficiency in the war effort, and to recommend to the producer, supplier or Federal establishment concerned his recommendations for any improvement disclosed by the investigation. All applications for critical materials or equipment for use in scientific research and development shall be made through the Office.

7. The Office has the exclusive right to use and license any invention, patent, or patent right belonging to the Federal Government or resulting from research to which any Federal Government agency or department has contributed since May 27, 1941, upon payment of fair compensation for any resulting deprivation of property right.

8. Any party, when so requested by the Administrator, must furnish any information, data, or record concerning scientific and technical facilities during a state of war and concerning scientific and technical personnel at all times.

9. A sum of $200,000,000 is requested to carry out the provisions and purposes of the Act.

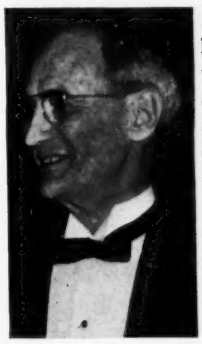
10. The Administrator shall make a report annually to the President and Congress summarizing the activities of the Office and reporting on the status and progress of science and on scientific and technical problems affecting the public interest together with such recommendations as he may deem appropriate.

Con:

By H. C. Parmelee, Editor, Engineering and Mining Journal

ASIDE from the futility of attempting to mobilize science and coordinate technological facilities and personnel, there are specific objections to details of Senator Kilgore's bill.

Probably its most obvious weakness is the lack of any scientific or technological qualifications for the Administrator and his associates, who would have extraordinary powers to achieve the purposes of the bill. Unlike the Department of Justice, which is manned by lawyers, and the Public Health Service, which is in charge of physicians, this new agency would be at the mercy of lame duck politicians or bureaucrats whose sole qualifications would be the need of a job and Presidential favor. It is a little terrifying to think what seven political appointees could do with a fund of $200,000,000 to spend in a field with which they were utterly unfamiliar.



Dr. Parmelee

Let us look at some of the purposes of the bill.

One is "to develop comprehensive programs for the maximum use of science and technology in the national interest in

periods of peace and war." Right now we have two or three thousand research organizations staffed by 50 or 75 thousand people—that includes the colleges and universities, the foundations, and the industrial research organizations—and it seems to me they are doing those things. It would be hard to say where we would be today in prosecuting this war if it were not for all these agencies and what they have been doing, and what they have learned and are able to turn over to the Government. Just how any agency that is to be set up now is going to do more in the way of developing comprehensive programs by the maximum use of science and technology than we are doing now, I don't quite understand.

It is going to "promote the full and speedy introduction of the most advanced and effective techniques" in all aspects of national life. One of the striking things about the bill is its comprehensiveness, its generous inclusion of everything; nothing is left out. It is going to introduce "the most effective techniques" into all aspects of the national life. We have been trying to do that for a long time.

It is going "to discover and develop substitutes for strategic and critical materials". That paraphrases a lot of things people are doing all the time.

And "to promote interest in scientific and technical education, and to provide for all qualified persons the means of scientific and technical training and employment." Educators have been trying to do that for a long time. I have sat with committees that tried to see if we could find criteria that would indicate whether or not a man would make a good scientist or technologist, and we have made some progress, but this agency is going to provide for all qualified persons the means of scientific and technical training.

And it is going "to provide guidance in scientific and technical matters to the President, and Congress," and so on. I submit, they don't want it. I have been guilty of offering advice to the President and to the Congress for a good many years. For the past 25 years this country's mining industry and mining people have been trying to get Congress to build stockpiles of strategic and critical materials against the day when we might need them. That has been going on for 25 years—I can produce the record. But it was not until this country was threatened with a war that we began to build stockpiles. We began to buy when the price was up and when shipping was difficult, and we didn't get them.

The bill is going "to standardize, when in the public interest, scientific and technical designs," and so forth. The Senator has some good points there. I have been toying with the idea of mobilizing lawyers, and it occurred to me what a fine idea it would be if we could fix it so we wouldn't get one decision in one Circuit Court of Appeals and another decision in another.

Study and analysis of the bill show that its sponsors have little understanding of the nature of science and technology, or of the characteristics of research and invention. Hence the bill has not had the support of the leading scientists and technologists of the country.

For the most part its supporters have visualized a scientific Utopia that lacks reality and practicality and many of them have used the hearing on the bill as a sounding board for their pet ideas.

In conclusion, I agree with the laudable intent of the bill, but I think that it is matched only by its impracticability. I think that those whose hopes are most aroused will be most disillusioned. I know that Government research laboratories have never given us our great inventions nor industrial developments, and they couldn't do it any better under the Kilgore Bill than they have been able to do it in the past.

Curiously enough, one of the ardent proponents of the bill has given the best argument against it, and I quote what he says:

"The bill has certain features and clauses which are difficult to interpret in terms of reality and which might, in fact, prove to be laden with the seeds of evil."

Based on a reply to a talk by Senator Kilgore delivered at the 35th semi-annual meeting of the American Institute of Chemical Engineers, New York, May 10, 1943.

Pro:

(*Continued from preceding page*)

this will be more effective, more useful, more beneficial than merely resisting the passage of the law blindly. New conditions require new laws. Let us aid in making these laws as just and effective as possible.

Finally, I find no regimentation of scientists provided for in the Bill. The establishment of the Bureau of Standards, while it provided control over the technologists employed, did not regiment the scientists. Nor will the establishment of the Office of Scientific Mobilization regiment us. I have no fear that the control of personnel will be more intense than the Act specifically states, namely the control of occupational deferment in time of war. Wars, I trust, do not last forever and even in wartime I would a hundred times, nay, a million times, prefer to put occupational deferments in the hands of such Office than to leave them in the hands of local draft boards. In the matter of mobilization of facilities I believe that only one who is easily scared by the bogeyman will be genuinely frightened by the provisions of the Bill. Mind you, during a state of war and then only, the Administrator, subject to review by the President, may determine that a certain facility is needed for the defense of the Nation or to prosecute the war, that the need is immediate, and that all other means to obtain the facility upon fair and reasonable terms have been exhausted; then—and then only—he may requisition said facility upon payment of fair and just compensation, but no patent may be seized, and the facility is to be returned when the War is over. I believe that this procedure can be carried out at present when needed even without any Kilgore Bill, but the procedure should be regularized as the Bill provides. If the Bill did not have this provision I would be in favor of inserting it.

Finally, I would add a word about the alleged danger of governmental competition with the activities of our own members. It is an old cry. The financial danger to our activities has never arisen from the operation of government laboratories, but only from the competition of unqualified inadequately skilled pretenders to the name and status of consultants and from the operations of university laboratories making substandard charges. But there has not been any claim that the governmental laboratories have poached on our preserves by either of these two methods, the carrying out of consultation work in competition with us by unqualified persons or at substandard charges. Only work of national importance is to be carried out by this organization of the nation. A huge field remains to us and just as the creation of every Federal laboratory has led to more work and opportunities for men and organizations not part of the Federal scheme, so I have no doubt that this Federal activity will mean more wide-spread opportunities of service for all chemists, both within and without the Federal structure.

Summary of an address before the Association of Consulting Chemists and Chemical Engineers, New York City, April 26, 1943.

Application Procedure for Rationed Vegetable Oils

ALL industries which use crude or rationed cottonseed, peanut, soybean or corn oils in the manufacture of inedible products are urged by the War Food Administration to place their orders with suppliers by the 5th of the month preceding delivery. This will give suppliers ample time to apply for allocation to meet their requirements.

It also is important that industrial consumers anticipate their needs well in advance so that they may obtain their ration certificates prior to delivery. Certificates should be given to suppliers before delivery.

Chemical Reclamation Program Extended

THE Salvage Division of the War Production Board has announced an extension of its chemical products reclamation program, designed to make sure that no valuable chemical resources, such as solvents and cleaners, cutting and lubricating oils, paints and chemical by-products, go down the sewer.

In order that it may help plants to improvise equipment for capturing and salvaging chemical products that would otherwise be wasted and lost to further war use, the Industrial Salvage Branch of the War Production Board has begun a study designed to locate important chemical reclamation opportunities. One thousand large users of chemical products, including manufacturers of munitions, aircraft, heavy machinery, engines, chemicals and plastics, have been asked to report briefly on their chemical products reclamation practices.

"Only when we know who is failing to reclaim chemical products essential to the war effort, is it possible for us to work out with these plants chemical salvage processes and procedures which fit their individual plant needs," explained Paul C. Cabot, Salvage Division Director. "Reclamation of apparently dirty and useless chemicals is a field of salvage activity that has been speeded and stimulated by war necessity. In peace time, we wasted chemicals, just as we wasted and neglected scrap metals. Today we cannot afford to waste chemicals, no matter how contaminated and useless they have apparently become."

"Chemicals have more varied uses than steel in a war production program. A thousand chemicals and chemical processes go into the building of a battleship. Tanks, guns, planes and all other military equipment require 'war paint' protective coating to shield it from the elements—sun, rain, snow—to which it may be exposed.

"We need to stretch our chemical resources to the limit, and reclamation of solvents and cleaners, cutting oils and lubricating oils, protective coating paints and chemical by-products is one of the practical ways of doing it," Mr. Cabot declared.

Many plants have already developed practical chemical reclamation systems. Their experience will be passed on by the Chemical Resources Section, Industrial Salvage Branch, to other plants which are still wasting chemicals.

The section's study will determine where solvents and cleaners, cutting and lubricating oils used in excess of 5,000 gallons a year and government specification coatings (paint) used in excess of 2,000 gallons a year are now being reclaimed (that is, whether inside or outside the plant) and in what quantity. In cases where reclamation procedures are not adequate, technical services will be supplied to the reporting plants to enable them to institute such procedures on an improvised basis without expenditure of critical materials.

Among the chemicals which can be recovered or reclaimed in significant quantities, and their uses, are the following:

Carbon tetrachloride, trichlorethylene, and ethylene dichloride, used in dipping, vapor degreasing, pressure and other cleaning operations.

Lubricating oils, cutting oils, hydraulic oils.

Naphtha, thinners, solvents and alcohols used in the manufacture of paint, lacquers and varnishes.

Toluene, needed for TNT, pharmaceuticals, rubber solvents.

Benzol, needed for gasoline, synthetic rubber, plastics and dyes.

Ethyl alcohol, employed in explosives, solvents, rubber and anti-freeze mixtures.

Butyl alcohol, needed for plastics, photographic film, metal cleaners, rayon, lacquer solvents, and artificial leather.

There are many war essential chemicals which cannot be practically recovered for re-use in their original form. Nevertheless, effective conservation can be accomplished by proper salvage methods applied to what is normally considered scrap. Included in this category would be:

Paints and lacquers—Sludge from spray booths properly processed and reused will extend the supply of such critical materials as glycerine, phthalic anhydride, phenol, which many times are present in the form of paint vehicle.

Plastics—The excess from a molding or extrusion operation in the form of flashing, trim, etc., can be re-worked for many uses, thereby effectively utilizing to the maximum such materials as phenol, formaldehyde, acetic anhydride, vinyl compounds and other plastic raw materials.

Redistribute Idle Inventories

WHETHER it is a half-inch pipe nipple or a 10-ft. fractionating column, experts from the War Production Board's redistribution offices throughout the country are prepared to tackle any procurement problem that impedes war plant output.

The Redistribution Division, according to a recent WPB report, locates idle, excess and frozen inventories through several different methods. The most complete and far reaching, and those with a mandatory feature, are the formal recovery programs such as are in operation on steel, copper, and miscellaneous items.

Under these programs lists of possible holders of material are compiled from the Department of Commerce Census reports and other sources. These holders are then sent inventory forms to fill out and return to the headquarters of the special recovery group. In the formal programs inventories are tabulated—steel at Pittsburgh and copper in New York, for example.

The result of these tabulations are then issued to interested parties in the War Production Board in the form of catalogs.

One of WPB's problems is keeping inventories straight and up to date. Holders often sell reported inventories of idle and excess materials without notifying the War Production Board. When this happens, the catalogs list material which is not available and the firm needing the material is disappointed.

In the case of materials that are completely allocated by the War Production Board, no national or regional catalogs are made up, because material can be transferred only by specific authorization of the Materials Division or branch in Washington.

In addition to the critical materials covered by a formal program, there are hundreds of other items which are in short supply in this country, but on which it has not been thought worthwhile to get out formal questionnaires. The Redistribution Division already has a list of about 500 such commodities.

Voluntary inventories are solicited from the holders of such materials. When they are reported, inventory cards are made, with one copy staying in the Region, one copy going to the holder, so that he can send it back when a sale is made, and one copy going to Washington to form a national file. This national file is useful for handling inter-regional transfers, when one Region cannot find the requested material. In addition the national file furnishes data to the industry Divisions in Washington for computing national inventories.

Dozens of examples might be cited of WPB's service in helping prompt completion of war contracts. The Redistribution Division, however, can't do the entire job by itself. It needs the cooperation of industry and contractors. That's why sale of inventory material should be reported promptly and why certain inventory forms have to be filled out—so WPB can move swiftly to the rescue of stymied contractors.

Safe Handling and Storage of PHENOL

ONE OF the commonest of the industrial organic chemicals, phenol can also be one of the most hazardous if it is not handled properly. As in the case of other so-called hazardous materials, there are some simple rules and procedures which apply to the handling and storage of phenol which if followed carefully will reduce risks to a minimum.

Looking first at the product itself, phenol USP is a white crystalline material which melts at 40-41° C., boils at around 180-182° at 760 mm. pressure, and weighs about 8.75 pounds per gallon when melted. It is inflammable and its vapors, when mixed with air, are explosive. It is corrosive to the skin and produces painful and dangerous burns. Phenol is hygroscopic, and the presence of water, even in minute quantities, lowers the crystallizing point materially.

For storing phenol, either riveted or all-welded tanks will be found satisfactory. Contact with iron, copper or bronze will cause the compound to darken and if a water-white color is desired, then nickel-clad steel construction should be used. If the water-white color is not important, iron may serve as a substitute. Aluminum is quite adequate if the phenol does not become hotter than 60° C. (140° F.). As hot phenol reacts vigorously with aluminum, this metal should not be used at temperatures much above 50°-60° C.

The centrifugal type of pump is satisfactory for use on phenol. As would be the case with any other liquid, the selection of the proper type of pump for any particular installation will depend entirely upon the proposed operating conditions. Lay your pumping problem before the pump manufacturer and he will be able to tell you whether his pumps will do the work. Give him the whole story as to what you want to do, the volume to be pumped in unit time, size and length of the lines, height to which the phenol will be raised, temperature of operation, etc.

Phenol is shipped in tins, drums, and tank cars. For special uses where the material must be kept free from iron, nickel-clad steel tank cars are employed. At normal temperatures, phenol USP is a crystalline solid. Therefore for unloading or transfer, it is melted by heating to about 70° C. (158° F.) and in this condition is run by gravity, blown or pumped as desired.

As the phenol may crystallize in the pipe lines, the lines should be provided with steam tracer lines and insulation. A satisfactory installation can be made by running a ⅜-inch steam line on the underside of the phenol line and wrapping both lines with standard magnesia covering. If the lines are out of doors, roofing paper should be wrapped around the pipe covering. Steam-jacketed lines are recommended for long lines which are loaded outside of buildings in parts of the country where the weather is very cold.

Phenol will, except in the hottest summer weather, be crystallized when it reaches you and it is necessary to melt it in order to remove it from the containers. Tins and drums are heated by placing them in a steam heated closet, being careful to place them with the lids or bungs up and to loosen the bungs or otherwise provide a vent before turning on the heat. Frequently the phenol is removed from the tins or drums by means of a pipe which is connected to a tank which connects in turn with a vacuum pump or

Attaching steam connection to tank car to heat phenol before unloading. The condensate should be inspected from time to time to make sure the coils do not leak.

Cracking air inlet preparatory to attaching compressed air hose to tank car. Goggles, rubber gloves and protective clothing minimize the possibility of bad skin burns.

Photos courtesy Monsanto

Loosening bung to relieve pressure before heating drum in chamber.

ejector. If this method is employed, make sure that condensed steam will not get back into the phenol when the steam is turned off on the ejector. Tins and drums generally have enough free board to allow for expansion of the phenol and to permit the insertion of the unloading line. Before starting to heat the containers, make certain the closures are loosened sufficiently to provide an air vent.

Top Unloading of Tank Cars

Phenol tank cars are provided with heating coils and safety vents. Before the contents of a car are melted, the car should be vented. The vent cap must be removed before the steam coils are connected to the steam supply line. The air vent is located on top of the car dome and is marked: AIR—OPEN FIRST. Vent should be opened gradually to avoid a sudden release of any pressure that may have accumulated in the car.

Before starting to unload, the phenol should be heated to a temperature of about 70° C. (158° F.). When the steam is turned into the coils, the condensate should be inspected from time to time to make sure that the coils do not leak. Even though the coils are tested before the car is loaded, rough handling in transit may cause the development of a leak. Presence of the phenol in the condensate can be detected by the odor, or by a milky appearance of the water, or by solid phenol itself in the case of a very bad leak. The steam should be turned into the coils gradually, using about 10-15 lbs. pressure for the first hour or two in order to avoid trouble from water seals caused by condensation. If the steam supply exceeds 100 lbs. pressure, a reducing valve should be placed in the line so that no more than 100 lbs. pressure can be put on the coils.

Some cars have a single coil, with one coil inlet and one outlet which are located on the bottom of the tank. These are 2-inch connections and are capped off with 2-inch pipe caps. Other cars have two coils, the inlets being located on one end of the car and stenciled: STEAM INLET. The outlets are found on the bottom of the tank. After the caps are removed, the inlet and outlet connections are provided with reducers, bushings and ¾-inch globe valves, and steam is admitted through piping or through a steam hose. Regulate the discharge from the coils by adjusting the valves on the outlet nipples.

When the phenol is well melted, it should be stirred for 1 to 1½ hours with *dry* compressed air by inserting a movable ½-inch pipe through the dome. Ordinary plant compressed air is not suitable because it will contaminate the contents of the tank car. An air filter connected in the air line will remove water and oil and provide a suitable air supply. Stirring assists in melting the phenol under the coils but is often unnecessary particularly in warm weather.

After the phenol has been warmed to about 70° C. it can be unloaded either by means of a pump or by air pressure. If air pressure is used, care must be taken to avoid excessive pressure in the tank. The safety vents contain frangible lead discs in the vent cap and these discs will rupture usually at a pressure of not more than thirty pounds per square inch. About fifteen to twenty pounds pressure is generally enough for unloading the phenol, depending upon the height to which it is to be lifted. To insure efficient unloading without bursting the safety disc, the air inlet lines should have a pop valve set at 25 pounds.

These air connections are shown in Figures 1 and 2.

Figure 1 shows a tank car that has a separate air inlet nozzle. From a compressed air header, a ¾-inch air line is connected to the air inlet nozzle on the tank car.

Figure 2 shows a tank car that does not have a separate air inlet nozzle. The safety vent nozzle, which has the frangible lead disc, must in this case be utilized for the air inlet nozzzle. Thus, the safety vent hood and lead disc are to be removed, and from a compressed air header a ¾-inch air line is connected to this nozzzle.

In both Figures 1 and 2, the ¾-inch air line running from the compressed air header to the tank car consists primarily of a shut-off valve, a water separator, a pressure reducing valve, an air gauge, a pop valve, hose couplings and hose, and

After connecting air line to car, phenol is unloaded using 15 to 20 lbs. pressure. Center: Sampling tank car contents with 8 oz. bottle held in wooden container. Right: Phenol car connected for bottom unloading (not recommended except when facilities for top unloading are not available; connection should always be made while phenol is solid).

an air release valve with the necessary fittings for connecting to the tank car.

Some cars are equipped with a bottom outlet. While bottom unloading is used, it is not recommended if facilities for top unloading are available.

Remember that the phenol is removed from the car through the standpipe which extends through the dome on top of the car with the lower end nearly to the bottom of the car. End of the standpipe which projects through the dome is capped off and is marked: ACID OPEN LAST. The cap is removed from the standpipe which is then connected to the line leading to the storage tanks. This unloading line should be equipped with a ¼-inch steam tracer line to keep it hot and prevent crystallization of the phenol.

A gate valve in the unloading line near the dome connection is recommended. It can also be used to build up air pressure on the tank cars. If this valve is kept closed until there is 20 pounds pressure on the tank car, when it is opened the warm phenol will immediately flow through the discharge pipe and will not crystallize and plug the line.

Into the underside of the unloading line a ¾-inch nipple fitted with a ¾-inch gate valve should be welded. This arrangement is used for draining in case it is necessary to interrupt operations after the unloading has started, especially if the unloading line is not equipped with a steam tracer heating line. Immediate draining avoids plugging of the line by crystallized phenol.

Some tank cars are designed for unloading from bottom outlets only and do not have a standpipe in the dome for unloading with air pressure. The risks involved in unloading phenol through bottom outlets are so great, however, that it should not be done unless absolutely necessary. If the air pressure operation cannot be used, then the manhole cover should be removed, a pipe inserted and the phenol removed through this by means of a pump.

If there is any possibility that even a portion of the phenol will have to be withdrawn from the bottom outlet, then a bottom connection should be made while the phenol is still solid, before the steam is turned into the heating coils. Should the bottom outlet cap be removed when the phenol is liquid, any leak or failure of the plug valve would cause a serious situation. The compound would flow or squirt out, perhaps injuring the workmen and causing the loss of the car's contents.

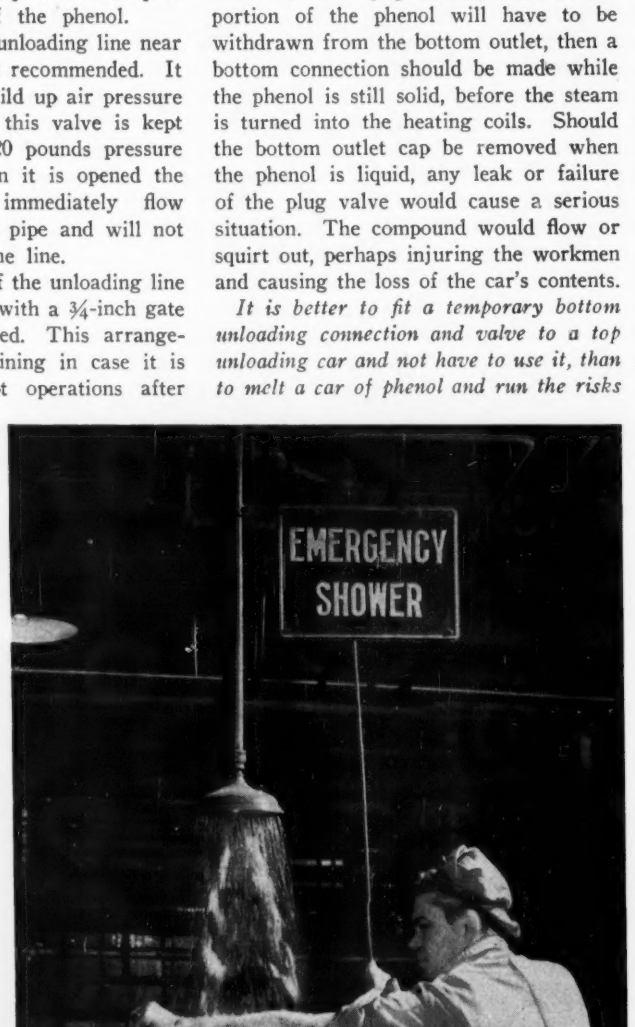
It is better to fit a temporary bottom unloading connection and valve to a top unloading car and not have to use it, than to melt a car of phenol and run the risks involved in attaching the bottom connections.

When the material has been unloaded the air is shut off and the car vented before disconnecting the line to the storage tank. To determine whether the car is empty, measure it through the air vent.

After the contents of the car are mixed with dry compressed air as previously described, they may be sampled using a eight-ounce bottle held in a container made entirely of wood. Lower the bottle slowly to the bottom of the tank car in order to get a representative sample.

To summarize, essential operations in the top-unloading of a phenol tank car are:

1. Open the vent to release pressure in the car.
2. Attach air connections.
3. Connect the steam line to the heating coils.
4. Turn in the steam at *low* (10-15 lbs.) pressure.
5. Examine the drip from the heating coils for evidence of leaking coils.
6. Heat the entire contents of the car to about 70° C.
7. Stir with dry air.
8. Sample the phenol.
9. Unload through the standpipe in the car dome.



Safety shower with quick opening valve should be located close to the phenol draw-off line. Phenol should be immediately washed from the skin with plenty of water and with 70% ethyl alcohol. Then apply burn ointment or soothing oil.

Bottom Unloading of Tank Cars

Emergencies may arise that make it necessary to unload from the bottom outlet. Under such circumstances, the following procedure is recommended:

1. Remove the dome cover and note whether the contents of the car are solid or liquid. *If liquid, check to be sure the plug valve is seated.*
2. Remove the cap from the bottom outlet and connect the valve and other piping for unloading.
3. Connect steam to the heating coil and melt the phenol as previously described.
4. When the material is melted, stir and sample.
5. Shut off the steam from the coils and direct live steam against the bottom outlet leg until it is hot enough to melt all the phenol in this area. Have the plug valve *open* and the unloading line valve *closed* during this operation.
6. Open valve and unload car.
7. After unloading the car, prepare it for return to the chemical manufacturer.

Unloading from bottom outlets involves considerable risks and should be done only when other means are not available. Take all possible precautions as regards protective clothing, goggles, etc. Be sure all connections are tight.

To Return Tank Cars

To prepare empty tank car for return:

1. Disconnect the line to the storage tank and screw the cap on the standpipe.

2. Remove the steam fittings from the coils and screw on their caps. In freezing weather, make sure the coils are blown out with air before replacing the caps.

3. Remove the air connections from the car and replace the vent connection, with the lead disc in place, on the vent nipple.

4. Dome cover should be on tight before returning.

5. Do not permit any water or steam condensate to enter the empty car.

Difficulties in Unloading

Certain difficulties may arise in unloading. One of the most frequent is a leaky gasket under the dome cover. Gaskets are made of ½ inch asbestos rope or sheet asbestos. If a leak in the gasket makes it impossible to put sufficient pressure on the car for unloading, first try to arrest the leak by tightening the bolts holding the cover. If the cover screws on, try to stop the leak by turning the cover another quarter or half turn. If the leak cannot be stopped in this manner, the gasket should be replaced.

The standpipe may become leaky or broken. In such cases it will have to be replaced before the car can be unloaded. Or it may become plugged, due to crystallized phenol. If, after the car has been heated until the phenol is melted, a small quantity of crystallized material remains in the pipe, it may be removed by ramming a ⅜-inch rod made of non-sparking metal, through it. Make certain there is no pressure on the car before trying to clear this pipe.

Before a car is loaded, the steam coils are carefully tested. Leaks may occur as a result of rough handling of the car in transit, or in winter months, because of freezing, due to the coils not being drained properly. It is important that the condensate from the coils be inspected frequently while the phenol is being melted. If the coils leak, they should be capped off immediately. In order to melt the phenol it will then be necessary to make up a coil which can be inserted through the dome cover.

Safety Measures

As phenol vapors are inflammable, no open flames should be permitted in the neighborhood of storage tanks or tank cars. All electric fixtures in buildings where phenol is being handled should be provided with vapor-proof globes and explosion-proof safety devices.

Phenol not only produces serious burns but if left in contact with the skin for some time it may be absorbed into the blood stream and produce serious injury. Workmen who handle phenol should wear goggles, rubber gloves, and rubber shoes. Contaminated clothing should be removed immediately.

FIGURE 1
AIR PIPING ARRANGEMENT
FOR UNLOADING PHENOL FROM TANK CARS.

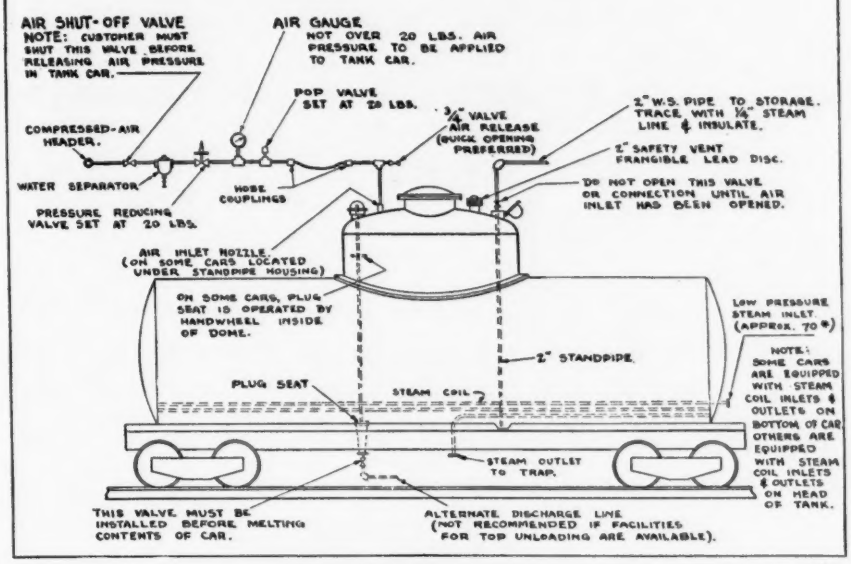
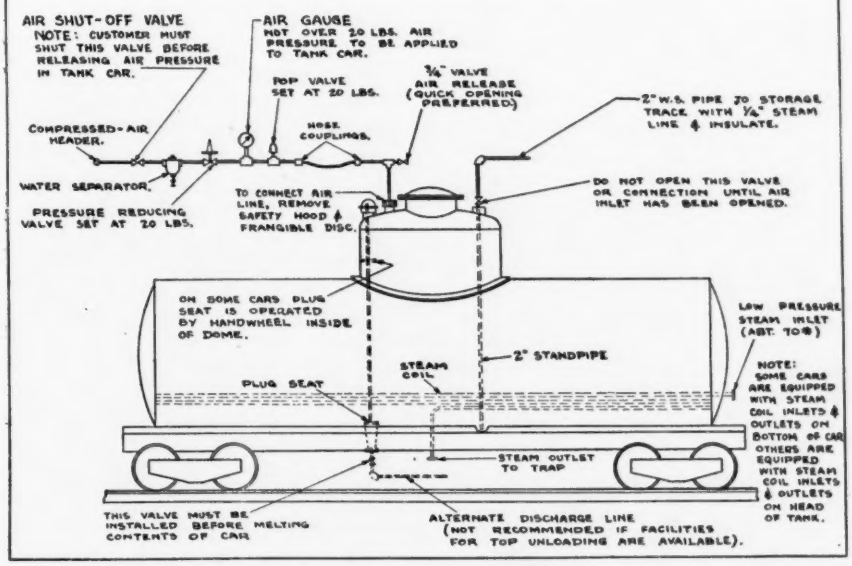

AIR SHUT-OFF VALVE
NOTE: CUSTOMER MUST SHUT THIS VALVE BEFORE RELEASING AIR PRESSURE IN TANK CAR.
AIR GAUGE
NOT OVER 20 LBS. AIR PRESSURE TO BE APPLIED TO TANK CAR.
POP VALVE SET AT 20 LBS.
¾" VALVE AIR RELEASE (QUICK OPENING PREFERRED)
2" W.S. PIPE TO STORAGE. TRACE WITH ¼" STEAM LINE & INSULATE.
2" SAFETY VENT FRANGIBLE LEAD DISC.
DO NOT OPEN THIS VALVE OR CONNECTION UNTIL AIR INLET HAS BEEN OPENED.
COMPRESSED-AIR HEADER.
WATER SEPARATOR
HOSE COUPLINGS
PRESSURE REDUCING VALVE SET AT 20 LBS.
AIR INLET NOZZLE (ON SOME CARS LOCATED UNDER STANDPIPE HOUSING)
ON SOME CARS, PLUG SEAT IS OPERATED BY HANDWHEEL INSIDE OF DOME.
LOW PRESSURE STEAM INLET (APPROX. 70 #)
2" STANDPIPE
NOTE: SOME CARS ARE EQUIPPED WITH STEAM COIL INLETS & OUTLETS ON BOTTOM OF CAR. OTHERS ARE EQUIPPED WITH STEAM COIL INLETS & OUTLETS ON HEAD OF TANK.
PLUG SEAT
STEAM COIL
STEAM OUTLET TO TRAP.
THIS VALVE MUST BE INSTALLED BEFORE MELTING CONTENTS OF CAR.
ALTERNATE DISCHARGE LINE (NOT RECOMMENDED IF FACILITIES FOR TOP UNLOADING ARE AVAILABLE).

FIGURE 2
AIR PIPING ARRANGEMENT
FOR UNLOADING PHENOL FROM TANK CARS.


AIR SHUT-OFF VALVE
NOTE: CUSTOMER MUST SHUT THIS VALVE BEFORE RELEASING AIR PRESSURE IN TANK CAR.
AIR GAUGE
NOT OVER 20 LBS. AIR PRESSURE TO BE APPLIED TO TANK CAR.
POP VALVE SET AT 20 LBS.
¾" VALVE AIR RELEASE (QUICK OPENING PREFERRED)
2" W.S. PIPE TO STORAGE TRACE WITH ¼" STEAM LINE & INSULATE.
COMPRESSED-AIR HEADER.
HOSE COUPLINGS
WATER SEPARATOR.
TO CONNECT AIR LINE, REMOVE SAFETY HOOD & FRANGIBLE DISC.
DO NOT OPEN THIS VALVE OR CONNECTION UNTIL AIR INLET HAS BEEN OPENED.
PRESSURE REDUCING VALVE SET AT 20 LBS.
ON SOME CARS PLUG SEAT IS OPERATED BY HANDWHEEL INSIDE OF DOME.
LOW PRESSURE STEAM INLET (ABT. 70#)
STEAM COIL
2" STANDPIPE
NOTE: SOME CARS ARE EQUIPPED WITH STEAM COIL INLETS & OUTLETS ON BOTTOM OF CAR. OTHERS ARE EQUIPPED WITH STEAM COIL INLETS & OUTLETS ON HEAD OF TANK.
PLUG SEAT
STEAM OUTLET TO TRAP
THIS VALVE MUST BE INSTALLED BEFORE MELTING CONTENTS OF CAR
ALTERNATE DISCHARGE LINE (NOT RECOMMENDED IF FACILITIES FOR TOP UNLOADING ARE AVAILABLE).

There should always be a safety shower with a quick opening valve close to the phenol pump or draw-off line. If a workman gets phenol on his skin he should immediately wash the affected part with plenty of water and then with ethyl alcohol of about 70% strength. Ordinary rubbing alcohol is satisfactory for the purpose. Because of the possibility of blistering the skin with 70% alcohol, some prefer to use copious quantities of 25% alcohol instead. It is slower in solvent action, however, and necessitates more washing. The alcohol wash should be followed by an application of any good burn ointment or soothing oil.

The supply of alcohol should be adequate to do the entire washing job. If the layer of phenol on the skin is thick, then alcohol of at least 70% strength must be applied immediately because water or dilute alcohol would be too slow in its removing action. As the shower can quickly be brought into operation and water may be used with safety on all body tissues, the installation of a shower is necessary.

Phenol burns in the eyes are best treated by protracted flushing of the eyes with water, followed by an application of a bland oil such as olive oil. The treatments described above are first-aid measures only. The case should receive the attention of a physician or an eye specialist immediately.

Acknowledgment is made to Monsanto Chemical Company for the information on which this article is based.

Alien Properties Now Aid U.S. in Production of Chemicals and Other War Materials

Critical materials, patents, and facilities for war production formerly belonging to the Axis or nationals of Axis-occupied countries —many pertaining to chemistry and chemical industry—have been taken into custody and are being used to hasten the day of United Nations victory. The results to date are summarized here by the Office of War Information from information made available by the Office of the Alien Property Custodian and the Treasury Department, the agencies charged with waging this phase of the war.

MORE than $7,000,000,000 of assets of enemy and enemy-occupied nations are now under Freezing Control or under control of the Alien Property Custodian. Every company in which Nazi influence was known to exist has now been Americanized, according to the Custodian. These companies are now giving valuable support to the war and are playing an important role in helping this nation meet its production goals.

A total of 41,077 patents and pending patent applications owned by enemy nationals and nationals of enemy-occupied countries, covering inventions in every field of applied science, have been vested and are under the control of the Custodian.

These patents represent the expenditure of millions of dollars and millions of manhours of research by the finest scientific minds of the Axis countries and of the nations under Axis yoke. They cover some of the latest achievements in the production of dyestuffs, plastics, pharmaceuticals, electrical goods, and textiles. They include many patents covering processes which have enabled the enemy to carry on mechanized warfare while cut off from petroleum, rubber, and other basic raw materials. They include 1282 in the field of ordnance and aeronautics, 25,423 relating to manufacture, transportation, power and machinery; 6,647 chemical; 836 metallurgical; and 6,889 electrical. Several groups of patents are still being studied by the Alien Property Custodian's Division of Investigation and Research which, when vested, will make a total of about 50,000 patents and patent applications.

Extensive research is now being conducted on many of the patents. This research has progressed to the point where wide development of many substitute materials for more critical materials will be possible. Instances are the production of wool from casein; nitro-glycerin from petroleum by-products; shaving creams and soaps from scrap leather; production —also from scrap leather—of an admixture for cement to increase workability and waterproofing; corrosion inhibitors and rust preventers from chemicals of the vinyl type.

During the last war the Alien Property Custodian had seized some 17,000 enemy-owned patents and copyrights. Some of these were sold to the Chemical Foundation, Inc. (a private, non-profit Delaware Corporation set up at President Woodrow Wilson's direction) and licensed by that organization to various American business enterprises under arrangements designed to exclude permanently hostile alien control. The great majority of these patents, however, were returned to their alien owners subject to licenses to the United States Government. In spite of these precautions, German interests intent on monopolizing American enterprise gradually regained throughout the years a substantial degree of influence.

Immediately after the close of the last war German finance and industry began the building within the United States of a powerful organization centered in the chemical field, but extending also to the electrical and heavy goods industries. These commercial enterprises, not content to prosper by honest trade, were used as bases of operations to carry out German political plans. When the Nazi Party came into power it promptly established a strong alliance with German industry. As a matter of fact, the party from the beginning had been financed by strong groups in German Big Business which realized shrewdly that an imperialistic, chauvinistic movement coud be effectively used to promote the monopolistic aims of the industrialists. The alliance formed a powerful lever for German control of enterprises in the United States and South America. It made wide use of Fifth Column tactics to promote its plan for world domination.

Various devices were employed by powerful German financial interests to gain and maintain control in the United States and in Latin America. Before the last war, foreign ownership of corporations in this country had been pretty much in the open. No attempt was made to conceal German ownership of companies over here. But, having learned from the experiences of 1917 that this policy made seizure of their holdings a simple matter, the German politicians took steps to guard against such seizures in the Global War they knew was to come. And so, American or neutral "fronts" were widely used to conceal true ownership.

Case of General Aniline

An example is the General Aniline & Film Corporation. When the company was incorporated in 1929 legal ownership was placed in a Swiss holding corporation. Later, ownership of a majority of the shares was transferred to holding companies incorporated under the laws of the Netherlands. From 1929 to 1942 the I. G. Farbenindustrie used General Aniline & Film Corporation as its principal tool in the United States. Executive personnel were Germans sent to the United States, many of whom took out citizenship here, married American citizens, and formed strong social and business ties. Technical personnel was mostly German, sent here from Germany. As the war approached, the Nazi Government made use of this organization in its espionage activities.

Persons were placed on the payroll of the General Aniline & Film Corporation who were unknown in the company. There was a constant movement of German agents who were carried as employees of the corporation for several months then shifted to other fields.

Control by Option

Another method was the use of options. For example, the stock of the General Dyestuff Corporation (organized as a Delaware corporation) was owned by two American citizens but was subject to an option held by Chemnyco, Inc., which, in turn, was nominally owned by American citizens but was incorporated and functioned as a service agency for I. G. Farbenindustrie in the United States.

One practice of concealment was the "exclusive sales agency" device. For example, General Aniline & Film Corporation, one of the two most important producers of dyestuffs in the United States, never established a dyestuffs sales organization. On its organization in 1929 the corporation made an exclusive sales contract for sales representation in dyestuffs with General Dyestuff Corporation, which had been organized to act as exclusive sales agent in the United States for I. G. Farbenindustrie. Thus, to control exercised through concealed stock ownership and key personnel General Aniline added control through sales and sales policies.

As the Nazis strengthened their grip at home and began preparing for world domination, by arms, they resorted, more and more, to the devices of concealment in anticipation of the blockade and other economic defense measures which would be directed against them. Dummy organizations, ostensibly owned by purely American interests but actually under Nazi control, were set up to hold the markets in this Hemisphere. For example, a dummy organization, Fezandie and Sperle, virtually unknown in export circles, was set up by powerful chemical interests to insure the shipment of chemicals and dyestuffs to their organizations in Latin America. When, in June 1941, the Treasury froze all financial transactions of firms whose activities were held to be against the interest of the United States, the Nazis sought to evade the act by setting up in South and Central America dummy organizations ostensibly owned by South and Central American interests. The establishment on July 17, 1941, by this Government of a black list of firms in Latin America (the Proclaimed List of Certain Blocked Nationals) or firms acting in German and Italian interests made it possible to cope with such dummy companies.

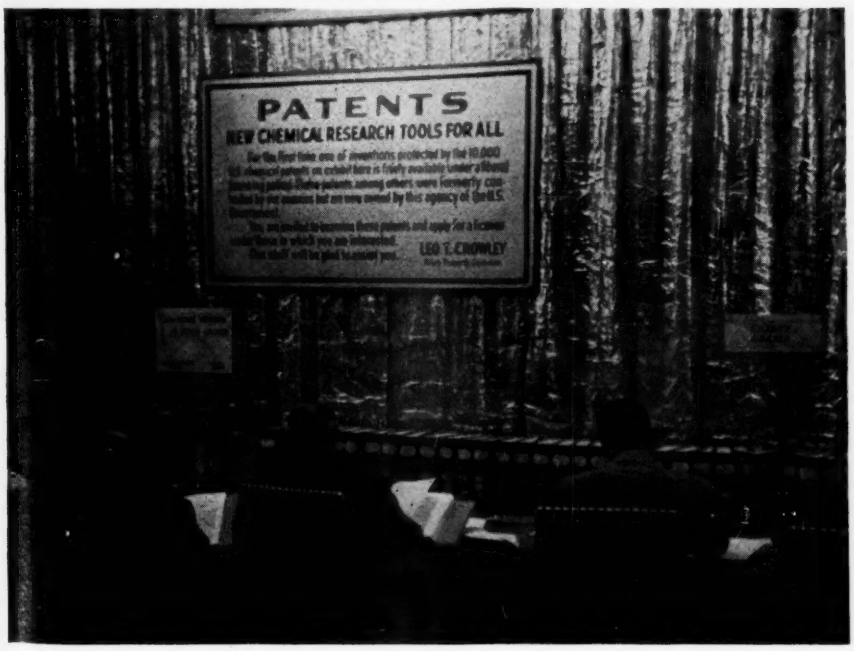
"Freezing Control Order"

By the invasion of Norway and Denmark, the Nazis brought out into the open their plan for world conquest. Washington acted quickly. On April 10, 1940, the President, by Executive Order No. 8389—the so-called "freezing control order" issued pursuant to the Trading With the Enemy Act passed during the last war—prohibited not only all transactions involving Norwegian and Danish property within the United States except as authorized by the Secretary of the Treasury, but all transactions by persons subject to the jurisdiction of the United States involving such nationals and their property wherever located. As other countries fell before the armies of the Nazi invaders or were dominated by them, the Control was extended.

On March 11, 1942, the Office of Alien Property Custodian was set up with Leo T. Crowley as director. Executive Order 9095 setting up the Office as a department of the Office for Emergency Management gave the custodian, among other powers, the power to direct, manage, supervise, control or vest any property within the United States which is owned or controlled by enemy nationals, or, in certain instances, by non-enemy nationals. Such property includes business enterprises of all kinds, real estate, trusts, estates, ships, patents, copyrights, and trademarks. Cash, bank deposits, and securities of enemy or foreign nationals are under the control of the Secretary of the Treasury, but the Custodian may obtain release of such assets if they are needed in administering the properties held by the Custodian.

Included in the properties taken over by the Government when we entered the war were a number of business enterprises whose activities were felt to be harmful to our interests, which could not be used by us in the war effort and whose continued operation did not appear to be advisable. These included businesses controlled by Germany, Japan or Italy or which were acting on behalf of these countries or their nationals. Such enterprises were liquidated, the business and assets turned into cash, creditors paid off, and the remaining funds placed in blocked accounts. More than 500 such enterprises were thus liquidated, including the foreign banks and insurance companies within this country controlled by the Axis. This work was begun by the Treasury Department in cooperation with state banking and insurance department and is being continued by the Alien Property Custodian.

This "library" of seized chemical patents attracted many searchers at the spring meeting of the American Chemical Society. Complete "libraries" containing copies of all vested patents have been set up in New York and Chicago.



Tangible Assets Put to Work

Also included in the properties owned by enemy-aliens when we entered the war were properties and businesses which could be used or diverted to the war program. Among these tangible properties were inventories of raw materials, valuable machinery, silk airplane and chemical factories, business enterprises ranging all the way from the great General Aniline & Film Corporation to small companies, valuable real estate holdings including exclusive New York apartment houses, truck farms and ranches.

The responsibility of the Alien Property Custodian with respect to this property was not only to preserve the values for disposition after the war but to use it to help win the war. As Mr. Crowley said, "Wars are not won by bookkeeping credits or cash. Enemy assets must be

used to produce." A quantity of enemy-owned machinery for making bombs and shells was taken from the piers where it lay idle and put to work in a new Navy plant. Japanese stocks of silk were taken from warehouses and made into parachutes, which may some day land American paratroopers at the gates of Tokio. Raw materials were sent to American war plants to make guns to fire at our enemies.

In a number of plants a thorough housecleaning of hostile personnel was undertaken after careful investigation, and the activities of the plants directed to American war production. At the $65,000,000 General Aniline & Film Corporation about 100 American citizens were dismissed, including five key executives, three of whom were receiving salaries in excess of $50,000 a year. Denaturalization proceedings have been instituted against some of these citizens. Schering Corporation was required to dismiss, among others, the head of its engineering department and its sales manager, both of whom were American citizens. A New Jersey airplane factory, the Luscombe Airplane Corporation, owned by citizens of Germany, was taken over, expanded, and turned over to the United States Navy for the production of training planes and engines. At the time this factory was taken over its employees numbered 150. Personnel is now more than 600, production has already doubled, and as soon as additional necessary equipment is installed the output will be considerably larger. One of the largest firms manufacturing automotive equipment was taken from its German owners and its output channeled into the production of war material. Chemical plants making drugs that are essential to the health of our armed forces and our citizens at home were freed from foreign influence and are now producing for us. Other companies now engaged almost wholly in producing war supplies are Buffalo Electro-Chemical Co., Nirosta, Korfund Co., E. Leitz, Inc., Rohm & Haas, and Carl Zeiss.

Many Patents Acquired

While tangible property seized from the enemy is being put to most effective use in the war program, it is in the field of patents that are to be found even greater opportunities to speed up the winning of the war. It is impossible even to guess at the value of the nearly 50,000 patents and patent applications vested by the Alien Property Custodian. Experiences of the last war offer a hint. Among the companies which secured German patent licenses during the last war were Dow Chemical Company, the DuPont enterprises, Union Carbide & Carbon, Monsanto Chemical Co., Grasselli Chemical Co., and Allied Chemical and Dye Corporation. The Benno Strauss patents, relating to iron-chromium nickel alloys, were licensed to American industry by the Chemical Foundation. These patents tied in with the development of the stainless steel industry in the United States.

A specific instance of an industry created under patents seized in the last war is the Atmospheric Nitrogen Company, a subsidiary of Allied Chemical & Dye Corporation, organized for the purpose of manufacturing synthetic ammonia. Another is the Dermatological Institute, formed to produce Salvarsan and Neosalvarsan under licenses from the Chemical Foundation.

Licenses Are Non-Exclusive

Under the existing policy announced by the Alien Property Custodian, the benefits derived from the patents seized during this war will be spread far more widely than was the case in the last war. During the last war the Government granted exclusive use of patents to individual corporations. Today, the Government grants only non-exclusive licenses and charges no royalties therefor. However, in the case of patents which, at the time of vesting, were already subject to exclusive licenses for which royalties were paid by the American licensee, the Alien Property Custodian while vesting the title to the patents has allowed the licensee to continue in effect so that the royalties on such licenses are paid to the United States Government. The licensee, however, may, if he wishes, relinquish his exclusive license and obtain a non-exclusive royalty free license in place thereof. Similarly, the Alien Property Custodian has indicated that if the war effort requires, he may cancel the exclusive license and make the patent generally available to American industry. Licenses are issued to any reputable American firm or individual on payment of a license application fee of $50 for each single patent, plus $5 for each additional related patent. Licenses extend for the life of the patent unless revoked for failure to live up to the license agreement or unless the interest of the Government requires their revocation. Accordingly, rights to the use of many of the most valuable patents are within the reach of even the smallest American enterprise.

Large Number in Use

Today, a number of enterprising companies and individuals have received licenses and are putting the patents to use. Such licenses relate to chemical warfare, mining machinery, hydraulic presses to stretch metal airplane parts, production of sulfur from "sour gas" from oil wells, automatic textile-winding machinery, hoisting machines, food processing, and many other products and processes. In many instances by use of these patents, better products are being made with less critical materials and with the saving of badly needed manpower.

The Office of Alien Property Custodian realizes its obligation to the innocent nationals of enemy-occupied countries who have taken out patents or filed patent applications in the United States. It realizes, too, the danger of transfer to title to enemy hands under duress. To prevent the Axis from making any use of these patents owned by non-enemy foreign nationals, and to help their countries—our Allies—throw off the shackles of the invaders, the inventions of these unfortunate victims are being made a working part of our war machinery. Title to these patents and applications is being vested in the name of the United States Government; non-exclusive licenses are being granted to Americans for the life of the patents. The ultimate disposition of these patents vested from nationals of enemy-occupied countries is being taken up with the governments in exile. Licenses on these patents are royalty-free only for the duration of the war and six months thereafter. At the end of that period, reasonable royalties on the basis of prevailing commercial practice will be charged.

Policy on Enemy Patents

The policy of the Alien Property Custodian in the case of enemy patents and patent applications already licensed is, briefly, this: An existing American exclusive licensee will be permitted to retain his sole right to use of the patent unless he voluntarily waives his exclusive interest or such waiver is felt to be necessary to the war program. Existing royalty agreements under exclusive licenses will be continued but the royalties are paid to the Alien Property Custodian. If exclusive rights are given up, no further royalties need be paid.

Where provisions of outstanding licenses to American concerns restrict production or are in any way detrimental to the war program, the policy of the Alien Property Custodian is to take drastic action. This policy will be followed whether the licenses are exclusive or non-exclusive, whether the patent was vested from nationals of an enemy or an enemy-occupied country.

The Office of Alien Property Custodian has stated that it is concentrating its energies on bringing the vested patents and patent applications to the attention of as many American businessmen as it can reach in order that the patents may be developed and used. Each vested patent and patent application has been listed under the standard Patent Office classifications of patents. These lists are available for distribution on payment of a fee, 10 cents for each numbered classi-

fication except for nine of the larger classes, where the charge is 25 cents each. Complete catalog is available for $5. Classified lists and catalogs may be obtained from the Chicago branch of the Office of Alien Property Custodian. Printed copies of vested patents and drawings and specifications of vested patent applications may be obtained from the Commissioner of Patents, Washington, D. C., for 10 cents each.

Patent "Libraries" Opened

In addition, "libraries" of copies of vested patents have been opened in New York, at 120 Broadway, and in Chicago, in the Field Building. These "libraries", occupying 75 feet of shelf space and containing all the patents vested from enemy and other aliens, are arranged for ready reference.

The Alien Property Custodian has offered to cooperate with American industry to see that adequate research on the inventions disclosed in these patents is undertaken in industrial laboratories and in the research laboratories of universities, endowed foundations, and the Government. Many of these inventions, which were developed in the important centers of scientific research now controlled by our enemies, are of the greatest economic value. This is particularly true of the pending patent applications which represent the latest research—kept secret until now. Included in these vested patents are those covering the most important recent developments of well-known foreign corporations, for example; the armaments of Skoda and Schneider et Cie; alloys and metallurgical equipment of Societe General Metallurgique de Hoboken; the electrical ignition systems of Robert Bosch; the automobile motor inventions of Daimler-Bens, Fiat, Marelli; the chemical products of Montecatini, Kuhlmann and Norsk-Hydro, and the electrical equipment of Kwaisha Toden Denkyu Kabushiki.

"American industry must carry out a thoroughly adequate research program if the full advantage of these patents is to be realized," said Mr. Crowley. "In quality, American industrial research is unsurpassed. In quantity, it should be greatly expanded by further research based on these inventions, American business will be able to create improvements to increase production, now of the machines of war, in post-war years of the implements of peace. Original discoveries resulting from this research may, of course, obtain the protection of American patent laws."

Considering Protective Measures

The question may arise as to whether American industries will not be reluctant to undertake such research unless a patent licensee has some assurance of an opportunity to recoup his development costs before other licensees take advantage of the development. For instance, a manufacturer might easily spend $100,000 or $150,000 on the development of a complicated machine tool. To do this work from a non-exclusive license might not seem feasible. Several plans are now under consideration to meet such situations. Any plan which is finally evolved will make provision for public hearings to determine whether the necessary research and development can be accomplished on a freely competitive basis or whether some measure of protection must be afforded. This will insure equal opportunity to all who are willing to undertake the development of inventions requiring substantial outlays.

In many cases, however, exhaustive research will not be necessary to derive substantial benefits by applying the inventions covered by the patents to a company's own business. The procedure for obtaining a patent license is simple. A letter of application is sent to the Office of the Alien Property Custodian, Washington, D. C. Besides giving his name, nature of his business, citizenship, etc., the applicant is requested to state his facilities, if any, for using the invention sought to be licensed; e.g. actual equipment, technical skill and available or proposed capital; and the purpose for which the license is needed and its relation, if any, to the war program. If the applicant is a reputable American firm or individual—and a brief investigation will reveal this—the license will be issued within a few days.

Licensees will have the full protection of the First War Powers Act, 1941, Section 301 of which provides that no person shall be held liable in any court for anything done in good faith in reliance upon authority of the Act. Licensees will be defended by the Alien Property Custodian in any suits brought on behalf of former owners charging infringement of the patents which have been licensed by the Custodian.

How to get a License to use a Seized Patent

1. *Write to the Office of the Alien Property Custodian, Chicago, Illinois, for an Index of Patents vested in the Alien Property Custodian.*
2. *Write to the same address for classified lists of vested patents and patent applications in which you are interested. All classes are sold for 10 cents each, except 9 classes which are 25 cents each.*
3. *Printed copies of vested patents and drawings and specifications of vested patent applications may be secured from the Commissioner of Patents, Washington, D. C., for 10 cents each.*
4. *Send to the Office of Alien Property Custodian, Washington, D. C., your letter of application for a license to use a vested patent. Application fee of $50, plus $5 for each related patent to be covered in one license should accompany application.*
5. *In preparing letter of application give following information.*
   - *a. Name and address.*
   - *b. Nature of business.*
   - *c. Legal form of business (corporation, partnership, sole ownership, etc.).*
   - *d. Registered trade name, if any.*
   - *e. Date and State of incorporation, if a corporation; date of formation, if partnership.*
   - *f. Name, citizenship, and legal residence of officers and directors, partners or proprietor, as case may be.*
   - *g. If a corporation, the percentage of voting stock owned by or for the benefit of non-citizens of the United States.*
   - *h. Number and title of specific patents or patent applications sought.*
   - *i. Facilities for using the inventions sought (equipment, technical skill, available or proposed capital).*
   - *j. Purpose for which license is needed and its relation, if any, to the war program.*
   - *k. Statements as to whether any existing licenses are known under the patents or patent applications requested.*

M C A Holds Streamlined War Meeting

Lammot duPont, MCA Executive Committee chairman, and Thomas W. Elkington, president, Philadelphia Quartz Co.

D. P. Morgan, chief, Chemicals Division, War Production Board; D. B. Keyes, chief, Chemical Industry Branch, Office of Production Research and Development.

BEHIND closed doors at the Waldorf-Astoria on June 3, the Manufacturing Chemists' Association held a brief 71st annual meeting devoted to war problems of the industry.

A feature of the banquet session, at which the Association acted as host to members of the Synthetic Organic Chemical Manufacturers Association, was an address by Lammot du Pont, chairman of the board of E. I. du Pont de Nemours and Co., in which he emphasized that individual effort rather than any ingenious master plan will determine the success of post-war planning in this country.

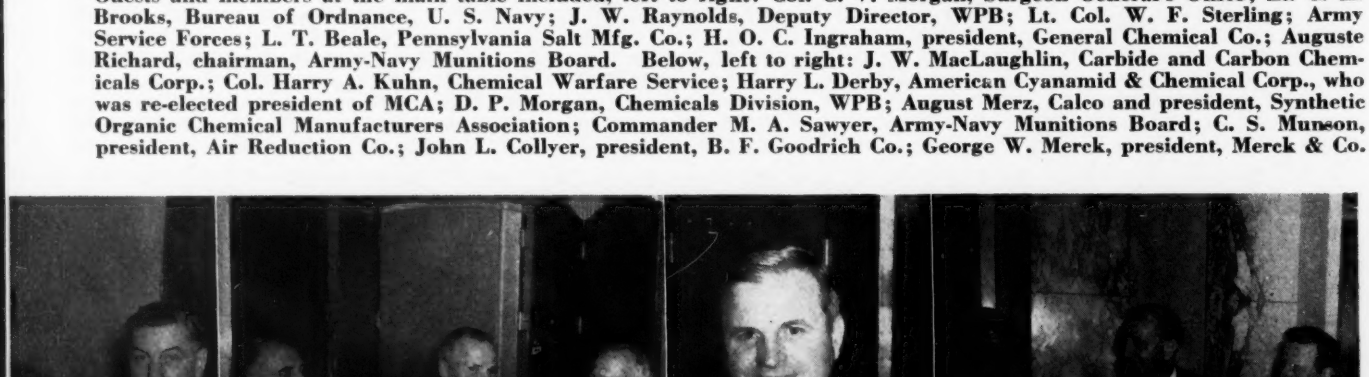
Practical post-war planning will be individual planning in which each person, each small company and each corporation will plan for itself, he said, adding that such an approach should bring about the highest peacetime employment in the nation's history. He revealed that his own company's post-war planning group has made a survey which "indicates that the new projects which du Pont will be ready to launch when the war is over, together with increased outlets for existing products, are expected to give rise to an all-time high in peacetime employment by the company."

"Such a result, of course, assumes that the country will have a sound economic system," Mr. du Pont said, "that there will be no seriously abnormal man-made business conditions or other difficulties which cannot be foreseen now. It assumes that certain fundamentals will be respected, for instance (1) sound money based preferably on the gold standard, (2) taxes at such a level as to give industry the incentive to expand and pioneer, and (3) that government will abstain from competition with business."

Albert W. Hawkes, a former member of the chemical industry and now United States Senator from New Jersey addressed the dinner gathering.

At the afternoon session, Donald B. Keyes, chief of the chemical industries branch of the Office of Production Re-

Guests and members at the main table included, left to right: Col. C. V. Morgan, Surgeon General's Office; Lt. C. H. Brooks, Bureau of Ordnance, U. S. Navy; J. W. Raynolds, Deputy Director, WPB; Lt. Col. W. F. Sterling; Army Service Forces; L. T. Beale, Pennsylvania Salt Mfg. Co.; H. O. C. Ingraham, president, General Chemical Co.; Auguste Richard, chairman, Army-Navy Munitions Board. Below, left to right: J. W. MacLaughlin, Carbide and Carbon Chemicals Corp.; Col. Harry A. Kuhn, Chemical Warfare Service; Harry L. Derby, American Cyanamid & Chemical Corp., who was re-elected president of MCA; D. P. Morgan, Chemicals Division, WPB; August Merz, Calco and president, Synthetic Organic Chemical Manufacturers Association; Commander M. A. Sawyer, Army-Navy Munitions Board; C. S. Munson, president, Air Reduction Co.; John L. Collyer, president, B. F. Goodrich Co.; George W. Merck, president, Merck & Co.

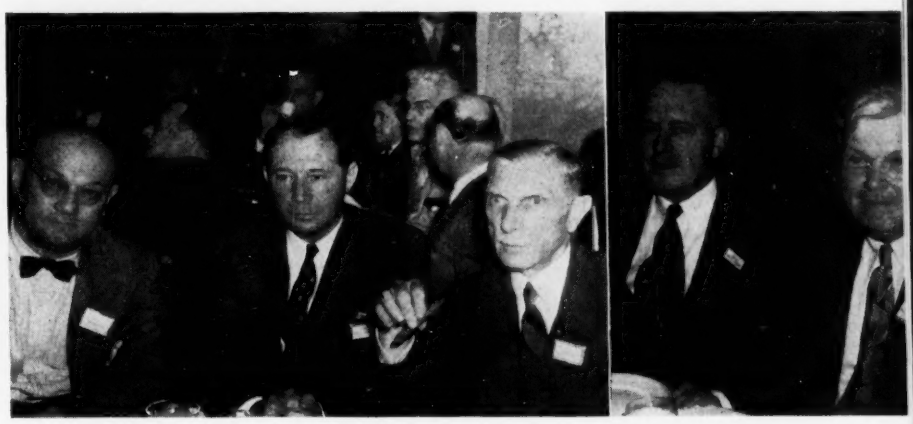


G. M. Read, E. I. du Pont de Nemours & Co.; A. E. Marshall, president, Rumford Chemical Works; Tom C. Garry, mgr., Design Div., Eng. Dept., E. I. du Pont de Nemours & Co.; W. F. George, Hooker Electrochemical Co.; J. T. Richards, Diamond Alkali Co.; V. G. Fox, Jr. and F. H. Nichols, General Chemical Co.

Above, left to right: R. T. Major and E. F. Massiglio, Merck & Co.; D. L. Taylor, Hooker Electrochemical Co.; R. M. Jones, Barrett Co.; R. B. Wittenberg, International Minerals and Chemical Corp.; Blythe Reynolds, George Lewis and F. W. Weckman, all of Heyden Chemical Corp.

search and Development, described the purpose of that Office, which he said is "to mobilize and utilize the technological personnel and facilities of our nation for the prosecution of the war. Its primary concern is maximum production of needed critical materials. Its field embraces all materials of industry, both crude and processed, with the exception of synthetic rubber."

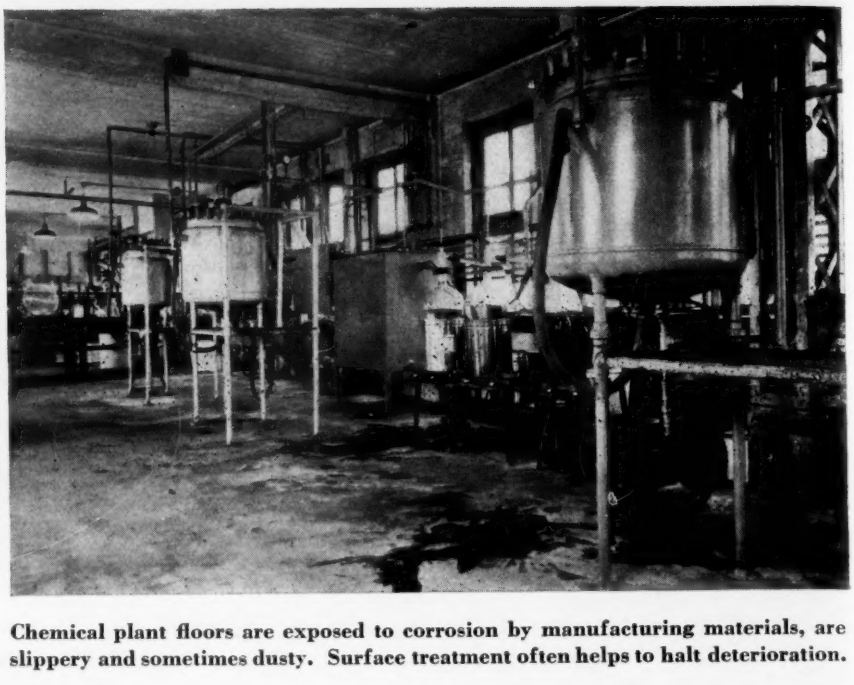
The following officers were re-elected: H. L. Derby, president; Lammot du Pont, chairman of the executive committee; J. W. McLaughlin, vice-president and W. N. Watson, secretary. New members added to the executive committee were: W. S. Landes, vice-president Celanese Company of America; H. M. Hooker, president Hooker Electrochemical Co., and P. T. Sharples, president Sharples Chemicals Inc.



Above, left to right: B. R. Armour, president, Heyden Chemical Corp.; Victor E. Williams, Monsanto Chemical Co.; George Simon, vice-president and sales manager, Heyden Chemical Corp.; M. G. Milliken and R. B. McKinney, Hercules Powder Co.

Below, left to right: H. M. Kauffman and G. A. Benington, Mutual Chemical Co. of America; A. H. Eustis, president, Virginia Smelting Co.; W. S. Landes, Celanese Corp. of America; Robert LeBaron, Virginia Smelting Co.; E. W. Maynard and J. R. Frorer, Atlas Powder Co.

Accelerated production usually means greater spillage and mechanical wear and tear on chemical plant floors, with consequent need for closer attention to floor maintenance and protection. Here are some pointers on selecting the proper protective treatment for concrete floors.



Chemical plant floors are exposed to corrosion by manufacturing materials, are slippery and sometimes dusty. Surface treatment often helps to halt deterioration.

How to Select a CONCRETE FLOOR TREATMENT

By *Charles S. Glickman*

PROPER maintenance and preservation of concrete flooring surfaces must be designed to provide material reduction or complete elimination of water retention, chemical staining, dusting, and similar deteriorating conditions. It is likewise desirable that the treatment seal and fill in any cracks resulting from forces or expansion or contraction or from the application of abnormal stresses due to overloading or vibration. Suitable maintenance measures should also afford a certain flexibility in the application of color effects simultaneously with the protective treatment. The subject of smoothness of the treated area may likewise be considered of some importance.

Suitable floor treatments embrace a wide variety of preparations ranging from inorganic salt solutions to synthetically prepared alkyds. Selection of the proper type of product must therefore be governed by the performance factors desired. Some of the more important of these factors are summarized here.

Elasticity. Concrete expands and contracts with temperature changes. There are therefore obvious disadvantages attached to the use of treatments which result in the formation of rigid and unyielding surfaces. Treatments embracing the use of aqueous salt solutions such as silicates are examples of the former condition. Materials which have a relatively high degree of flexibility are to be preferred. It should likewise be remembered that compounds such as silicates often aggravate "surface powdering" due to the formation of unyielding surface films.

Powdering. Wearing in concrete is apparent in the form of either powdering or cracking (where the latter is not the result of abnormal stresses). The presence of concrete "dust" is undesirable for many reasons—unsightliness, soiling of shoes and garments, abrasive effects on precision equipment and machinery and danger to health.

Crack Filling. The presence of cracks and slight holes or indentations is unsightly and provides an opportunity for water, dust, and debris to collect. In addition, these faults in the surface become focal points which result in a more rapid deterioration of the surrounding areas. A suitable treatment must therefore provide some positive measure of filling and sealing such crevices.

Slip Resistance. Slip-resistance is a vital factor in the evaluation of any type of floor finish or maintenance treatment. An accurate or completely evaluated analysis of this consideration is difficult in the light of other and interfering factors. Positive distinctions, however, as to relative slip-resistance between dissimilar treatments as wax solutions and inorganic salt solutions such as zinc sulfate or magnesium fluosilicate can be drawn. The choice, of course, lies with the latter type. However, as to the determination of slip-resistance differentials between salt solutions and varnishes or oil emulsions, the problem is more difficult. Perhaps a more accurate determination is possible if we consider that the former compound yields a smoother surface on concrete than the latter and especially if relatively thin coatings are applied. It would follow that smoother surfaces have a lower slip coefficient than rougher ones. On the other hand, further considerations such as the action of water on the treated surfaces might have further bearing on this phase of the discussion. The non-aqueous compounds would have a greater tendency to repel water than the inorganic salt solutions and therefore the action of the surface under a slip-stress would be lesser in degree with the former than the latter.

Water-Resistance. The factor of water resistance is of great importance in the selection of a finish for use on concrete. Any tendency to absorb water will shorten the life of the surface and may affect the health of the occupants as well. The apparent dampness of concrete is almost always noticeable. The conditioning of concrete so as to overcome the retention of water in the surface either through absorption from the air or ground or by accidental wetting is an important essential in the maintenance and care of a floor of this type. Inorganic products such as silicates and sulfates are not waterproof as are varnishes, wax solutions, organometallic salt solutions, etc. At best, the former are merely somewhat more repellent than the otherwise untreated surface.

Discoloration. The staining of concrete surfaces is a subject difficult to discuss unless specific discoloring agents are considered. Brine or alkali solutions can be counteracted by the selection of certain of the synthetic varnishes which are proof against such compounds. Acids can likewise be counteracted by the use of synthetic resin solutions or rubber solvent preparations. The inorganic compounds with certain exceptions to be mentioned hereafter are probably the best resistors of grease. In general, selection of the type of treatment must be determined first by experiment against the most commonly encountered staining influence and this selection tempered by consideration of all other important factors.

Hardening. The problem of rendering the surface as resistant to wear as possible and increasing the toughness of the surface without detracting from other desirable properties is of prime importance. Hardening agents such as magnesium fluosilicate, zinc sulfate, and sodium silicate, are not completely resistant to the action of alkaline soaps. On the other hand, products such as phenolic varnishes show remarkable resistance to boiling soap solutions, dilute caustic soda solutions and boiling water. The resistance of such treatments as wax in solvent solutions, oil emulsions, oil treatments, and rubber in solvent solutions, falling between the varnishes and the salt solutions, would depend upon the length of time the treatment was on the floor, the conditions to which it was exposed and the type of detergent treatment used.

Bakelite resin protective finish was wet buffed into the pores of 64,000 square feet of concrete floor at the Coca Cola Bottling Company plant, St. Paul, Minn.

Ease of Application. The problem of application is a recurrent one wherever materials have to be applied to surfaces whether such application be done by hand or mechanically (spray). The main consideration is whether or not the material can be easily "worked." A product that can be mopped, brushed or sprayed is preferred to one that has to be applied with a trowel—and there are such products as the latter. In general, any product of relatively low viscosity will have equal ease of application with the sole possible exception of those few products that dry extremely rapidly. The number of applications required to attain the proper effect is another factor which must be considered. It follows that the film or layer produced on the concrete by the application of a treatment should of course be completely uniform.

Drying Time. The elapsed time necessary for any treatment to reach a point where the treated area can be put back into normal service is of the utmost importance. Current programs in plants engaged in the production of war materials call for three-shift seven-day operations of personnel and equipment. Generally, drying times for the majority of available commercial products recommended for use on concrete range from a minimum of at least 1½ hours to as long as 24 hours.

Heat-Resistance. The ability of a finish to withstand heat is another desirable property to be considered where plant conditions are such that the surface must be exposed to unusual temperatures whether these be merely the boiling point of water or higher temperatures such as are produced by live steam, jacketed equipment or still higher heats such as encountered in foundries. The selection of a proper treatment in this case seems fairly simple as inorganic salt preparations will withstand very high temperatures if unaccompanied by moisture. Varnishes on the other hand will withstand boiling water if properly formulated.

Inflammability. The subject of inflammability has always been one of importance, but in our opinion overstressed. It would be an important consideration if a floor had to be treated during regular production hours while there was a possibility of open flame or sparks igniting the vapors released as a result of the drying of the applied compound. Fortunately, however, there are several ways whereby this element of danger may be counteracted or completely eliminated. Where the requirements of the treatment are such that inorganic salt solutions may be successfully utilized then and in that particular case, there is no possibility of fire. However, where other types must be employed, their susceptibility to ignition may be partially overcome either by supplying suitable ventilation during application or by converting them into a less hazardous form. The latter may be simply achieved by the creation of emulsions utilizing wetting agents and sulfonated oils as has been successfully done with lacquers.

Color Availability. Industrial engineers and psychologists have already established beyond reasonable doubt that certain colors are not conducive to proper working conditions or particular operations. A recent discussion of this important subject brought to light the following phenomena. "Human reactions are greatly sharpened under the influence of red. The average person will tend to judge weights as heavier under a red light, it is said while blue and green lights have an opposite effect. A red light makes time seem to pass slowly to the average person while under green and blue lights, time is underestimated."[1] It follows that the same effects are produced by wall or floor colors. A suitable product therefore should be one that is available in practically any color without the necessity of having special batches made at a premium price.

Relative Cost. Proper evaluation of the cost of any type of treatment requires a simultaneous consideration of several interrelated factors. These may be described as *coverage*—area coated per unit quality of the compound per unit cost; *life*—resistance to wear or other conditions which the treatment must counteract or overcome; and *application*—the time and labor required to apply the product in a way to achieve maximum benefit.

Certain types of products become more effective with age while with others the reverse occurs. Generally, resin-oil products (varnishes) tend to become harder and more resistant while preparations such as silicates exert their maximum effect almost immediately and thereafter become less useful. Mills states, "Ordinary oil paints and varnishes are superficial, short lived and of little value. Solutions of paraffin in benzine or benzol, and emulsions of petroleum oil or fat in water, secured by the use of ammonia are superficial."[2] A product for use on concrete should therefore be specially compounded and prepared for this purpose exclusively and not be an ordinary paint or varnish with a different label and set of directions.

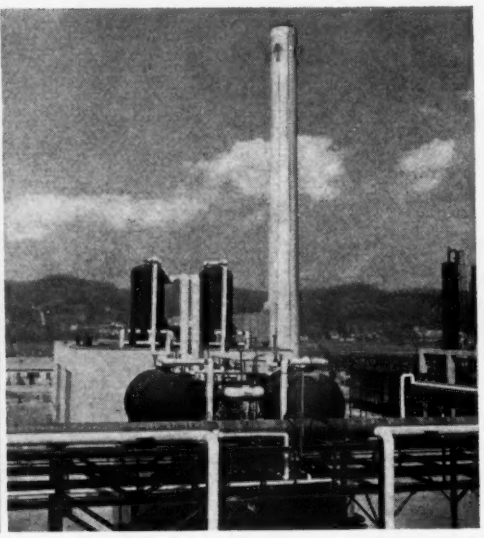
[1] "Witcombings," Wishnick-Tumpeer, Inc., Feb. 1942, "Red Tones Sharpen Human Reactions," page 10.
[2] "Materials of Construction," Mills, John Wiley & Son, 1931.

Buna S

By James M. Crowe

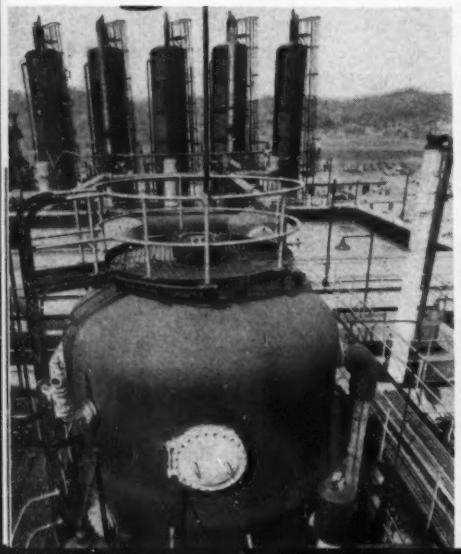
The first public inspection of any of the new synthetic rubber plants was recently held at Institute, West Virginia, where Carbide and Carbon Chemicals Corporation and the United States Rubber Company are operating a plant for the production of 90,000 long tons of Buna S (or GR-S) per year. Judging by this plant, the greatest single chemical and chemical engineering project ever attempted is coming true.

Auxiliary needs of plant are tremendous. Picture at the left shows interior of water purification building which supplies part of the 120,000 gallons of water needed per minute.



Above, left: Steam generation building at Carbide plant which consumes part of the 7,700 tons of coal needed each week. Right: Diphenyl heating unit which supplies two butadiene conversion units with high temperature heat.

Below, left: View of butadiene unit showing a converter in the foreground and distillation towers in the background. Right: Process is controlled by automatic instruments and devices from the central meter and control room.



THE synthetic rubber program is really beginning to bounce. This conclusion was reached about a week ago after an inspection trip to the country's largest integrated synthetic rubber plant located at Institute, West Virginia. By "integrated" we mean that this plant produces both the raw materials, butadiene and styrene, and the finished Buna S.

This is the largest of the Defense Plant Corporation's rubber plants which have so far gone into operation. It is scheduled to produce about 90,000 long tons per year of Buna S, the general purpose rubber which makes up about eighty percent of the synthetic rubber program. The principal ingredients of Buna S, butadiene and styrene, are produced here in units designed, built and operated by Carbide and Carbon Chemicals Corporation.

The finishing or copolymer unit which produces the Buna S was built from plans developed by a committee of engineers from four large rubber companies, and is being operated by the United States Rubber Company.

General contractors for the job were Ford, Bacon & Davis and the Blaw-Knox Company.

When completed the plant will have cost about $56,000,000. According to statistics from the Office of Rubber Director William M. Jeffers, this investment is not out of proportion to that required for plantation rubber. To produce this same quantity of natural rubber would require a plantation of 270,000 acres, containing 24,000,000 trees, and would have taken five years to start producing. Such a plantation would cost approximately $80,000,000 to prepare and bring into production, and would require a labor force of 90,000 men.

On the other hand it is said that the Institute plant will be operated by a staff of about 1,250. At rated capacity it will consume 197,000 gallons of alcohol per day. If all this alcohol were made from corn the plant would require, each year, the crop from 720,000 acres of land,

Plant Operating at Institute

assuming a yield of 2.35 gallons of 95% alcohol per bushel of corn and a yield of 42.6 bushels per acre. Actually the alcohol to be used in this plant could be made from many sources, such as grain, potatoes, sugar, molasses, or other agricultural products. Or it can be made synthetically from natural gas, refinery gas, or petroleum.

This plant is evidence of industrial chemical miracle that is being wrought in building a synthetic rubber supply practically overnight to replace a source of supply which took many years to develop. But maybe we shouldn't say it's a miracle. Rather, it is a tribute to the American chemical industry's technical knowledge and ability which has been built up during the past twenty years by diligence and hard work. One cannot visit such plants as this without experiencing a thrill of pride and satisfaction to see that in spite of all the confusion and political wrangling the industry has gone ahead and built the plants and is now putting them into operation.

The plant is laid out along the Kanawha River and consists of two main sections, one for the production of butadiene and styrene and the other for the copolymerization of these materials into Buna S.

The first of these sections for production of butadiene and styrene is operated by Carbide and Carbon Chemicals Corp., and here the story goes back to August, 1940.

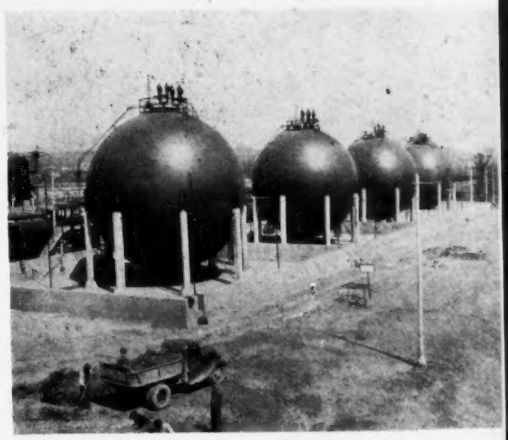
Because Carbide had been producing some butadiene since 1923 and was well acquainted with the problems in both butadiene and styrene production, company representatives attended a conference in Washington for the purpose of considering synthetic rubber possibilities in view of the threatening situation in the Far East.

After this conference Carbide went "all-out" on plans for a projected plant of 10,000 tons of butadiene a year. After the United States entered the war this figure was increased to 20,000 tons. Soon this was increased to 40,000 tons and finally again doubled to 80,000 tons.

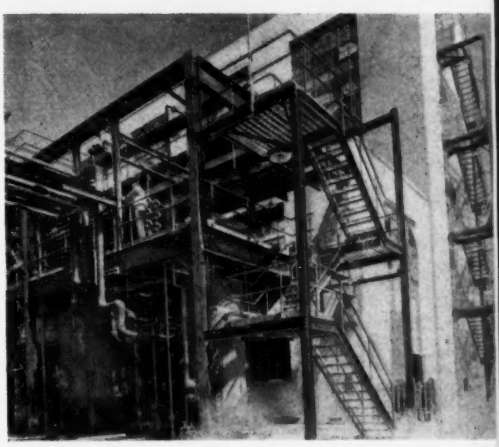
Construction work on the alcohol to butadiene units, of which there are four, started in 1942. The first unit started production on January 29, 1943, less than 10 months after ground had been broken and 2 months ahead of schedule.

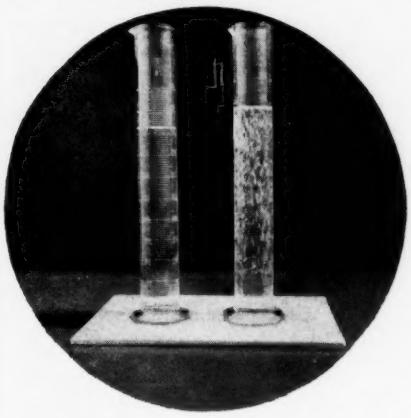
At the present time three of the units are now operating and the fourth is expected to go into production shortly.

According to Carbide & Carbon, the

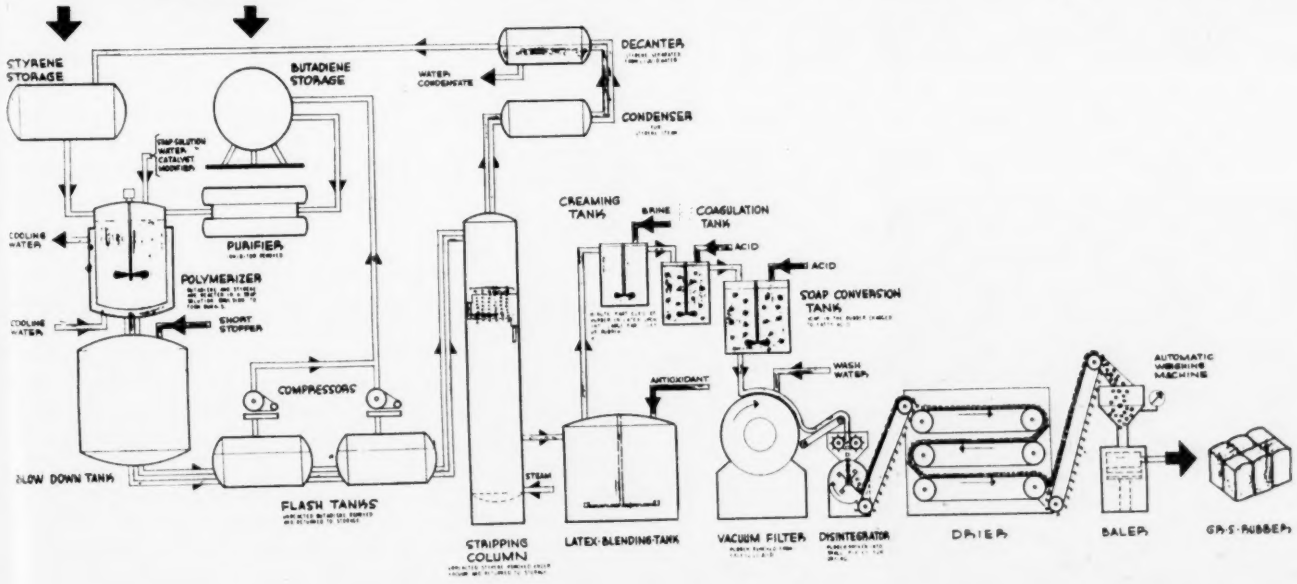


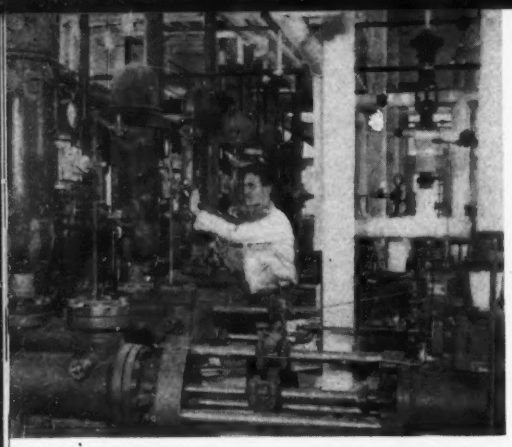
Above: Butadiene pressure storage.



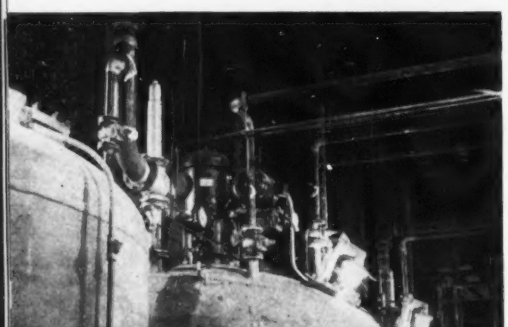


Left: Two clear liquids, test tube products not so long ago, are now piped in huge quantities from the Carbide plant to the U. S. Rubber plant where they are converted, according to the flowsheet below, into synthetic rubber. Above: Converter section of one of Carbide's twin units for the production of styrene.

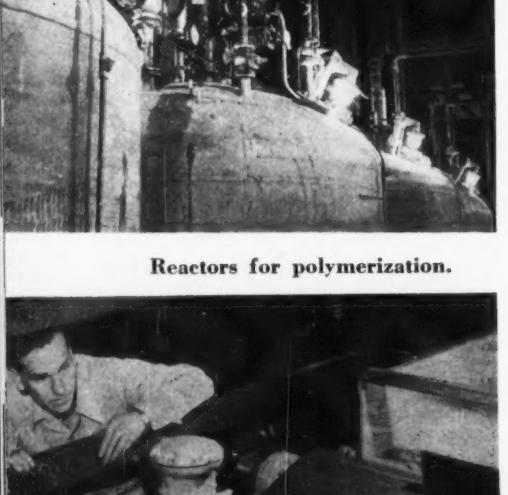




Transfer pumphouse at United States Rubber Co. plant for polymerization.



Reactors for polymerization.



Above: Buna S in form of crumbs is washed and dewatered. Below: Seventy-five pound bale ready for packaging and shipping to processing plants.

alcohol to butadiene process was chosen from several it had developed through research. The reactions involved had been known for years but their commercial application on a mass production basis was new. The alcohol process was said to have the following three assets. (1) It could be applied with the smallest amount of critical materials. (2) It could be put into production in the quickest possible time. (3) It would produce butadiene of high purity.

To carry out the reactions at the plant there are four 20,000-ton butadiene units. Essentially a unit is made up of converters, compressors, controls, stills and storage containers for alcohol, by-products and butadiene. Two butadiene units share one diphenyl high temperature heating system for supplying heat to the converters.

In the process the alcohol is vaporized and passed through the conversion system where more heat is supplied by the diphenyl system through a system of heat exchangers. Vapors from the conversion system are passed to the distillation system where the butadiene is purified to 98.5% and then piped to any one of four large spherical tanks where it is stored under pressure.

The styrene section of the Institute plant has a rated capacity of 25,000 short tons per year, which is divided into twin plants, each with a capacity of 12,500 tons. The raw materials needed for the manufacture of styrene are benzene and ethylene. The benzene is derived from coal tar and the ethylene is produced from refinery gases at the Carbide and Carbon Plant in Charleston and piped about 6 miles to the Institute Plant.

In the styrene process benzene and ethylene are passed over a catalyst in a reactor where ethylbenzene is formed. The reaction products then go to a series of fractionating columns where the ethylbenzene is recovered and fed to intermediate storage tanks. From these storage tanks it is then fed to a second set of reactors where oxygen is added and water removed in two steps to form styrene. The styrene is then purified and stored in brine cooled (to prevent polymerization) storage tanks ready for delivery to the adjoining copolymer plant operated by U. S. Rubber Co.

Copolymer Plant

The Copolymer plant directly adjoining the Carbide plant, is operated by the United States Rubber Co. It is made up of three identical 30,000 ton units for a total annual capacity of 90,000 long tons of Buna S. Each of the three units is equipped with 24 reactors, these reactors are jacketed, agitated glass-lined vessels. Each reactor is provided with its own hot and cold water circulating system for the exact control of reaction temperature.

Essentially the process consists of mixing about three parts of butadiene and one part of styrene with seven parts of soapy water to form a milky liquid or latex. With heat and the addition of a catalyst the dispersed droplets of butadiene and styrene are stirred in the reactors until they copolymerize to solid particles of Buna S.

The temperature and pressure of the reaction vessels are closely governed by recording instruments and devices from a central control room. Both this control room and the meter room are held under a small positive air pressure as a safety measure, since instruments of the type used are not spark-proof.

After the reaction is completed the contents of the reactor are transferred to blow-down tanks as a holding step between the reaction and the hydrocarbon recovery operations.

It is possible to achieve complete polymerization in one cycle, but up to the present time it has been found that the best quality rubber comes from a partial polymerization. It is therefore necessary to recover unpolymerized butadiene and styrene. The volatile butadiene is easily recovered by de-compression of the reaction mixture and subsequent recompression and condensation at ordinary cooling water temperature. The higher boiling styrene is recovered in a vacuum steam distillation process. This step is rendered somewhat difficult as the unpolymerized styrene has a tendency to dissolve in the synthetic rubber latex particle.

After the hydrocarbon recovery the synthetic rubber latex containing about 25% rubber is mixed with a rubber antioxidant and then stored and blended in reinforced concrete vats, of which there are twelve, each handling 30,000 gallons.

From these blending tanks, the latex is fed to the coagulating process, where salt solution and dilute sulfuric acid are added and the mixture held at a moderately elevated temperature under mild acidic conditions.

After coagulation is completed the material is filtered on large rotary vacuum filters, after which it is fed, in the form of matted sheets, to disintegrators where the Buna S is reduced to uniform particle size. This disintegrated material is next fed on belts to large 3-pass air driers. When the drying is completed, the material goes to an automatic weighing machine which delivers 75 lbs. of material to an automatic baler or hydraulic compressor where a 75 lb. block of Buna S, 14" x 28" x 6" in size is formed. In full operation a 75 lb. block will come from each of the twelve balers every 1¾ minutes.

After the bales are wrapped in cardboard containers they are ready for shipment to the rubber processing plants to be formulated into finished articles.

NEW PRODUCTS AND PROCESSES

By James M. Crowe

New Type Glass

A radically new type of optical glass whose unique light-bending properties will make superior lenses for seeing, taking pictures, and studying microbes has been developed after ten years of research, Dr. E. D. Tillyer, research director of the American Optical Company, recently announced.

The new glass, according to his statement, is further revolutionary because it contains no sand as an ingredient. Omission of the sand is primarily responsible for the exceptional optical properties.

By varying the composition, two glasses of the same type but having different properties have been discovered. One of the new sandless glasses is made of several common, available chemicals, boric acid, zinc oxide and aluminum hydroxide or beryllium oxide.

The second sandless glass is made by substituting cadmium oxide for the zinc oxide. The chemical element cadmium has never before been used as a major ingredient in glass.

In comparison with previous glasses containing sand, the new ones have a much higher index of refraction, or light-bending power, and a lower dispersion, or separation of light into its different colored rays due to their different refractive capabilities.

Because of their composition, the new glasses compress the spectrum. As a result, there is relatively little difference in the light-bending power for light of different colors, and rainbow effects are eliminated.

Other properties of the new glasses include low melting point, freedom from color, and stability to weathering and corrosion. The new compositions produce beautiful sparkling glasses which are resistant to chemical attack and almost good enough to be cut into gems.

Only laboratory products at the present time, the new glasses are not expected to be commercially available for sometime to come.

Glass Fiber Column Packing

A definite speed-up in the rate of distillation of the rectifying columns used by the beverage distilling industry to produce 190-proof ethyl alcohol, has been made possible by the development of a new glass fiber packing material for the columns, according to Owens-Corning Fiberglas Corp.

A principal factor in determining the rate of distillation of an alcohol rectifying column is the amount of exposed surface area which is presented for the condensation of water and other liquids. The ability of the glass fibers to increase the rate of distillation is due to the great increase in exposed surface area presented by the fibers.

One method employed in packing the columns with glass fibers consists of placing them in large, expanded-metal baskets which fit, one over the other, into the inside of the column. When used at their normal density of 3.5 pounds to the cubic foot, the fibers present 135 square feet of exposed surface area per cubic foot.

The beverage distilling industry is said to be erecting columns that are built like a silo, of clay tile, cypress staves, or steel plates salvaged from tanks formerly used for other purposes. The new columns are from 4 to 10 feet in diameter, and are approximately 50 feet high.

The operation of columns packed with glass fibers is identical with that of columns packed with other materials. Heated vapors from stills producing the normal run of 120-140 proof alcohol pass up through the column. Water and other liquids with a boiling point higher than the 170 degrees, Fahrenheit, boiling point of ethyl alcohol condense on the glass fibers, and flow back to be re-heated and re-vaporized by the rinsing vapors from the still, until the alcohol is extracted from them.

New Insecticide

The Department of Agriculture reported recently on the development of a fine-fog method of dividing and spreading insecticides, that is said to be disastrous to certain insects—especially mosquitoes, flies and many other household insects and greenhouse pests.

The discovery includes principally an insecticide material with an activator that makes the mixture work better, dissolved in a highly volatile solvent which propels and atomizes the insecticide into a fog, all in a container which keeps the mixture under high pressure ready for instant release.

The solvent evaporates very quickly, leaving the small particles of the insecticide suspended in the air as an aerosol. This fine suspension is nontoxic to man and animals and nonflammable, but highly toxic to insects—so toxic that it acts with the speed of a gas fumigant. It is as if the very small pieces were able to seek out the pests in every smallest nook and cranny of a room or tent where droplets would not float.

Regardless of the insecticide used, which depends upon the pest to be killed, the method consists essentially in mixing the killing agent with a liquefied gas, dichlorodifluoromethane, the complete mixture going into a strong steel container for release in small "puffs" when needed. With pyrethrum, sesame oil is used as a synergist—it doesn't take part in the actual job of killing insects but makes the pyrethrum more effective for that purpose. The very volatile chemical, dichlorodifluoromethane, provides the spraying pressure, so that a pound "bomb," such as is now used by the armed services, can be used by means of a thumb release.

Insulation Material

A new line of heavy-duty, high temperature pipe coverings and block insulation has been put into production by Munn and Steele, Inc.

The new material called Mascolite is a basic-bonded, vermiculite body for service at temperatures below 2000° F. It is an extrusion product, cured and processed at high speed, in extremely short cycles.

Among the advantages claimed for Mascolite are high insulating efficiency, freedom from shrinkage in service, adequate strength, unharmed by water, accurate measurements and a unique corrugated inner wall surface which provides an air film between the hot pipe and the body of its covering.

Pipe covering in a large range of sizes and thicknesses, as well as insulating slabs, back-up blocks, special shapes and plastic cement will be in full production early in June and plant capacities are said to be large with a considerable degree of flexibility.

Manganese from Low-Grade Ores

More than 100,000 pounds of metallic manganese, recovered from low-grade domestic ores by an electrolytic method developed in Bureau of Mines laboratories, have been delivered to the Treasury Department for lend-lease and to the United States mint, according to a recent report.

Using its own patented process, the Bureau of Mines for nearly two years has been producing electrolytic manganese in a pilot plant at Boulder City, Nev., while expediting other exploration and research phases in a broad plan designed to yield sufficient domestic manganese for manufacturing 87,000,000 tons of steel annually.

Approximately 12 pounds of manganese go into each ton of steel and give it strength and workability. Before December 7, 1941, the United States was importing more than 90 per cent of its manganese requirements, chiefly from Russia and India. Since then, however, domestic production has increased slightly, and some shipments have been received from abroad.

At the outbreak of war in Europe in 1939 the Bureau's normal program of manganese research was speeded up. By authorization of Congress, engineers of the Bureau of Mines and the Geological Survey broadened and intensified their search for domestic mineral deposits containing manganese and other strategic minerals. In the fall of 1940, an appropriation of $2,000,000 was made available to the Bureau for the construction and operation of pilot plants to beneficiate low-grade manganese ores, to produce metallic manganese from these ores, and to develop manganiferous deposits.

Meeting the urgency of the situation, the Bureau since 1939 has engaged in 37 projects for manganese exploration, has completed 34 and still is working on three. In some projects, a number of ore deposits were examined. As a result of this exploration, the estimated reserves of usable manganese ore in the United States have been increased by several million tons. The Bureau believes that application of the available processing methods to the known ores can make the United States self-sufficient in manganese.

There are two general processes—milling and hydrometallurgy—which can be used efficiently on low-grade ores, the Bureau has determined. The low-grade ores in the United States contain 1 to 30 per cent manganese, and milling methods, which are relatively inexpensive, produce a concentrate up to 48 per cent manganese. Hydrometallurgical methods, which dissolve the manganese away from inert materials for eventual recovery by chemical or thermal methods, produce a concentrate of 60 to 65 per cent manganese.

One of the newest processes developed in Bureau laboratories is dithionate modification of a sulfur dioxide leaching method (hydrometallurgy), which now is being tested in a pilot plant in cooperation with the American Smelting and Refining Company at the latter's smelter at Garfield, Utah, utilizing waste sulfur dioxide from the smelter.

Discovered and developed by Bureau engineers between 1935 and 1938, the electrolytic process extracts high-purity metallic manganese from low-grade ores through leaching and electrolysis.

Wrinkle Finishes

A new line of wrinkle finishes, containing no Chinawood oil, has been developed by the Maas and Waldstein Company.

These new finishes closely resemble the standard wrinkle finishes, the manufacture of which is now restricted by government order for a few special applications, because of the Chinawood oil shortage. According to the manufacturer, the new finishes form hard, durable coatings, cover rough metal surfaces effectively in a single coat, and are applied in regular wrinkle patterns by the same methods. They are obtainable in a full range of colors.

Synthetic Detergent

Quaker Chemical Products Corp. has announced a new synthetic detergent made from non-critical materials. Called "Scourite S," the new product is said to be quite effective. When used with textile processes it is reported to wet out quickly, work at low temperatures, not affect colors and rinse freely.

New Gasket Materials

R-196, Syntoflex and a synthetic rubberized strip material are three new sealing materials developed by Felt Products Mfg. Co. to meet the demand for a gasket material that will withstand compression and abrasion.

The advantages claimed for the material is—that it has very high water resistant qualities and that it will resist compression and abrasion, especially where high tensile strength and tear resistance are not essential. It can be supplied in strip form for uses where severe conditions are not encountered.

Uses recommended by the manufacturers for R 196 are—for pads of various kinds, under headlights, tail-lights and other attachments; for electrical conduit work; or for gaskets for water applications or other non-severe conditions where a soft seal would be required.

R 196 can be supplied in plain gasket form only, and is available in thicknesses from .020 to .125". The hardness range is from 55 to 80 shore durometer.

For more severe conditions, such as contact with oil, aromatic fuels, gasoline and other chemicals, the Company has developed a new synthetic material under the name of Syntoflex, which is said to be finding considerable application.

Plastic Coating

A permanently plastic material which is applied like paint to protect boiler drums, metal, wood or concrete storage tanks and water-submerged surfaces against corrosion and fungus growths has been developed by the Saverite Engineering Co.

Since it does not dry hard, "Serviron" stretches and contracts with temperature changes, eliminating the danger of hairline cracks in the coating which would permit undetected corrosion under the protective surface. When applied to already pitted surfaces, "Serviron" stops any further pitting. It will not melt, freeze, crack or peel at temperatures from below freezing to 500-550° F.

The material is used wherever clean, rust-free water is required, such as in drinking-water tanks, power plants, ship, schools, hospitals, laundries and process industries. It also withstands certain acids, brines and caustics, and may be used to coat valves, ammonia lines and underground pipes and tanks. "Serviron" is odorless and tasteless, and is safe to apply in enclosed spaces, as it does not give off any obnoxious or dangerous gases.

Beneficiating Hard Clays

Practical methods for treating hard clays of Georgia to obtain satisfactory substitutes for high-grade soft clays used in the paper, rubber, and ceramic industries have been described in a recent Bureau of Mines information circular.

Laboratory tests in the Bureau's experiment station at Tuscaloosa, Ala., have revealed that ball-milling or micronizing will convert the average hard Georgia kaolin, or clay, to the same grade as soft clays from the same state.

Georgia supplies most of the soft clays used in the manufacture of fine ceramic wares and as a "filler" and "coater" in rubber and paper production. Both soft and hard kaolins occur in an irregular belt extending diagonally in a northeasterly direction across the middle of Georgia, a distance of approximately 225 miles.

The chief objection to the commercial use of hard Georgia kaolins is their inability to slake and disperse. The soft clays slake readily in water, feel smooth and crumbly, and are easily processed. However, with the gradual depletion of the soft clay deposits, the problem of beneficiating the hard kaolins has become increasingly important. Studying that problem, Bureau of Mines engineers conducted a number of tests on 20 samples of Georgia clays. They found that the hard clays are composed of finer-grained particles than the soft clays and that they are relatively dense, hard masses or aggregates.

In conjunction with the experiments on particle size, power requirements and costs were studied. In its conclusion the report indicated that beneficiation to the same grade as soft clay may be obtained by several types of milling. However it was pointed out that it may not be worth while to so treat hard clays because of the cost. Nevertheless it was felt that "the time when the hard clays will be beneficiated commercially is probably not far distant."

A copy of Report of Investigations 3682, "The Hard and Soft Kaolins of Georgia," by T. A. Klinefelter, R. G. O'Meara, G. C. Truesdell, and Sidney Gottlieb, may be obtained from the Bureau of Mines, Department of the Interior, Washington, D. C.

INDUSTRY'S BOOKSHELF

Dictionary of Bio-chemistry and Related Subjects, Editor-in-Chief, W. M. Malisoff. Philosophical Library, N. Y., 1943; 579 pp., $7.50.

PIONEERING EFFORT in a new field is this dictionary of biochemistry compiled by forty-six collaborators. Correctly speaking, however, it is more an encyclopedia than an alphabetical glossary. For example—hemin is described in a sentence, while bacteriophage is a signed article of more than eight pages.

According to the editor the dictionary tries to maintain a balance between obsolescent, established and newly explored material. Following this prospectus, the articles comprehensively cover the history and review chronologically the chemistry of such subjects as require detailed treatment. This precursor in territory which is largely unknown and unexplored performs a task for which there is a definite need, that of defining and discussing hundreds of biochemical terms within the covers of one volume.

Micromeritics, The Technology of Fine Particles, by J. M. DallaValle. Pitman Publishing Corp., N. Y., 1943; 413 pp., $8.50.

FIRST OF ITS KIND to be published in a rapidly expanding field for research, the title of this volume is defined by the sub-title. As the author points out in the preface, attention was focused on the principles underlying studies on particulate materials, greater than 0.1 micron in size, whether they be powdered metals, pigments, plastics, dried foods, ground minerals or naturally occurring particles. This objective is attained and the author is to be commended for the effort necessary in appraising and assembling the rather diverse data that are available in the literature.

More than one half of the book is devoted to the physical properties of particles, including electrical, optical and thermodynamic considerations, and to methods of estimating particle size with a rather comprehensive mathematical treatment of the relations involved including discussion of statistical methods for calculating mean and average sizes. A survey of the principles involved in sieving is given in one chapter, and the properties of packed particles are covered extensively in a number of chapters. This treatment includes flow through packed beds and the applications in geology. The treatment of methods of particle size analysis is not as comprehensive as other parts of the book although the principles upon which these methods rest are covered. Certain studies of interest to particle size technologists are not discussed in detail among which might be mentioned the phenomenon of dilatancy and the distribution plots of Roller and Gates, both of which may be used for estimating a statistical surface from size distribution data.

The latter portion of the book discusses applications of particle size technology to the properties of muds and slurries and their sedimentation characteristics, the movement of particles by fluids, the theory of fine grinding (limited, however, to a discussion of ball mill operation and explosive shattering) and the separation of particles from air. The concluding chapter discusses the principles involved in the collection and study of atmospheric and industrial dusts. Each chapter concludes with a list of problems which makes the book suitable for classroom use.

This volume is recommended as a reference book for every one interested in studies of particulate materials or their separation from other media. Its usefulness lies in the presentation of most of the basic principles regardless of the specific material or operation in which any one individual may be interested. A selected bibliography is appended which helps to reduce the gap between the basic principles and certain industrial applications which are not described in detail in the book.

H. E. Schmeyer,
Port Neches, Texas.

Chemical Engineering Laboratory Equipment — Design — Construction—Operation, by O. T. Zimmerman and Irvin Lavine, Industrial Research Service, Dover, N. H., 1943, 530 pp. $5.50.

OUTGROWTH OF TWO PREVIOUS EDITIONS of "Unit Operations Laboratory Equipment," published in mimeograph form, this book has been modified and enlarged so as to make it more useful to chemical engineers and chemists in general.

The book consists of well-edited contributions from various university laboratories on the design, construction, and testing of laboratory and pilot-plant scale unit operation equipment. The various contributions are grouped into chapters under the following headings: Flow of Fluids, Flow of Heat, Evaporation, Drying, Distillation, Gas Absorption, Filtration, and Crushing and Grinding. An introduction to each chapter presents a concise treatment of the theory concerned with the particular unit operation.

For each piece of equipment listed there are presented design drawings, construction details, a bill of materials, approximate cost, a typical laboratory procedure, typical experimental data, and detailed calculations. Both data and calculations are listed in a manner consistent with good report-writing practice.

The authors realize that the book will not be widely used as a laboratory textbook because of "differences of opinion among instructors of chemical engineering laboratory courses as to the most desirable experiments to be performed." The book should be helpful to instructors, however, in planning their experiments, and especially to those in smaller schools who are outfitting unit operations laboratories.

A salient feature of the book is the presentation of detailed instructions for building and attaching accessories such as the tube-wall thermocouples and the like. This information, plus the methods of securing and presenting data, should make the book a valuable reference for young engineers and chemists with limited industrial experience.

The book might have been improved by condensing the material on Fluid Flow and Heat Flow and including equipment for spray-drying, mixing, ball-mill pulverizing, sedimentation, leaching, and liquid-liquid extraction.

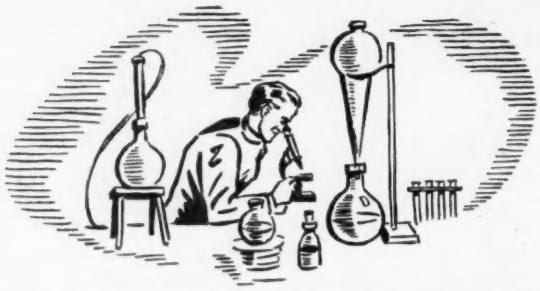
Although well-bound, well-printed, and exceptionally free of errors, the price appears to be a little high.

W. L. Faith,
Washington, D. C.

Dictionary of Science and Technology in English-French-German-Spanish, by Maxim Newmark. Philosophical Library, Inc., N. Y., 1943; 386 pp., $6.00.

CONTAINS 10,000 CURRENT TERMS in the English language most frequently used in the polytechnical and scientific fields and their French, German and Spanish equivalents, synonyms and definitions. Each entry is numbered, and separate indices of the three foreign languages, correspondingly numbered, permit two-way use of any of these languages with the English. To eliminate needless searching, a comprehensive system of cross-references offers a guide to the initial component of compound terms, to synonymous terms, and to colloquialisms.

Among the features of the work are listed conversion tables and the inclusion in the system of cross-references of the more extreme variations between American and British technical terminology.

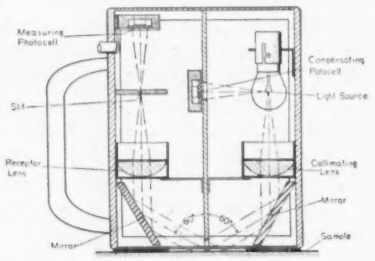


THE LABORATORY NOTEBOOK

Photoelectric Glossmeter

New Photoelectric Glossmeter announced by Photovolt Corporation is designed for measuring the specular reflection of paints and varnishes, ceramics, paper, and machined or polished surfaces.

The instrument is built into a portable housing, and consists of the instrument proper and the search unit. The latter is connected by a flexible cable and may be placed on the sample to be tested. Principle of operation is illustrated in the cross section through the search unit.



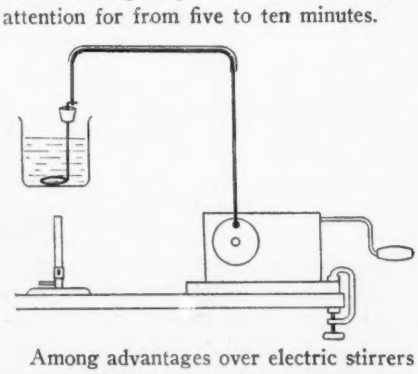
The light of a 15 watt incandescent lamp is collimated by a lens and deflected by a mirror before striking the sample. The specularly reflected light is deflected by a second mirror and condensed by a lens. A slit in the focal point of this lens serves to hold back light reflected in other than specular direction. The light passing through the slit is then registered on a barrier-layer photocell. A second barrier-layer photocell obtains the light directly from the lamp and acts as balance cell.

Measurements are taken by standardizing the instrument against polished black glass. If the search unit is placed on the paint or paper sample to be tested, the specular reflection can be read directly in terms of the perfect reflecting mirror as 1000.

Glossmeter can be furnished with search units for 60°, 45°, or 75° angle of incidence. The search units are, furthermore, available for different angles of spread of reflected light, depending upon whether high-gloss or low-gloss surfaces are to be measured. The indicating instrument is a pointer-type galvanometer of high sensitivity and comparatively rugged design. The use of the instrument is, therefore, not restricted to the laboratory. It may be taken into the shop or into the field for test fence work. Special models are available for operation from dry-cell batteries rather than from the power line.

Stir with Phonograph Motor

Old style phonographs, operated by spring motors, are being discarded in quantity. These motors, according to G. W. Thiessen in *The Chemist Analyst*, can provide excellent drives for reciprocating stirrers. A convenient arrangement is to screw the motor to a thin piece of board. The turntable is replaced by a large cork stopper in which a nail is driven near the outer edge. To this nail is loosely hooked a cord, which is guided by fire-polished glass tubes through any desired angles to a weighted ring stirrer. By one or two C-clamps the baseboard is secured to the laboratory table, so that the motor may be wound up with one hand. Typically, one winding will cause stirring to proceed without further attention for from five to ten minutes.



Among advantages over electric stirrers are the independence from wiring, the lack of fire hazard, and especially the noiselessness. This last makes the arrangement especially useful for conductometric titrations in which a bridge balance is made by sound. Moreover, the driving mechanism is kept away from reaction fumes.

Obviously, several stirrers in the same or different setups may be operated simultaneously by a single spring motor, and the regulator of the motor can be used for varying the speed of stirring. This method of stirring is well adapted for use with calorimeters and apparatus for the measurement of melting points.

"Black" Light

Pure fused quartz ultra-violet generator for laboratory and industrial analyses is offered by Pfaltz & Bauer. The unit can be used by the chemist to classify many solid inorganic substances by their characteristic color when examined under fluorescent light, to detect impurities and rate of deterioration of some materials, and to accelerate exposure and ageing tests on rubber, textiles, and paints.

A small, compact, portable model with 6 volt battery and 110 A.C. & D.C. attachments is featured for those who need the handtype of lamp.

Bellows Pumps

New positive bellows-type vacuum pump is now offered by American Automatic Typewriter Co. Four bellows mounted within a square plywood frame are expanded and collapsed by a revolving crankshaft through connecting straps. Chambers of the bellows are connected to each other, and to the pump inlet, by a channel in the pump frame.

Valves are in both leaves of each bellows. As a bellows is expanded, the exhaust valve located in the movable side towards the crankshaft closes, while the intake valve mounted within the bellows on the side adjacent to the pump frame opens. The expanding bellows draws air or gas through the channeled frame from the pump inlet. When the bellows is collapsed, the intake valve is closed and air within the bellows escapes through the exhaust valve.

A governor permits entrance of outside air to pump vacuum circuit when maximum or governed pump capacity is reached. According to the company, the governor provides a vacuum control means within the range of pump and prevents unnecessary wear on pump or pump drive.

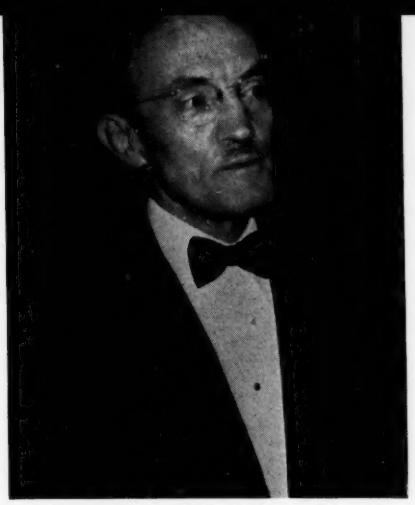
Pumps are supplied with individual motor drives for laboratory and production work and without motors for incorporation in machines where a driving means is available.

Air or gas exhausted by the pump does not pass over bearings or other parts where grit, dust and other foreign matter may settle and impair pump operation. Therefore an air filter is not essential when pump is operated in gritty atmosphere.

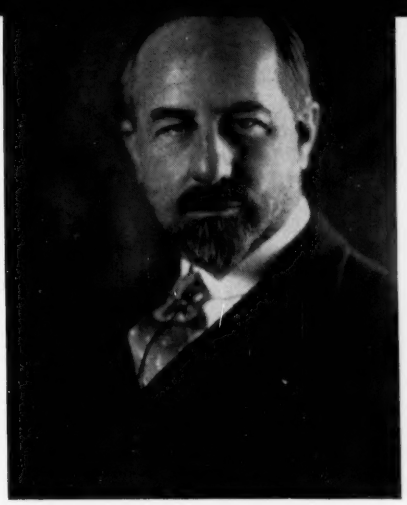
Suggestions Wanted

Have you any convenient, time-saving suggestions for use in the laboratories? Send them to CHEMICAL INDUSTRIES, *522 Fifth Avenue, New York, N. Y. We will pay $2 for each contribution published.*

Headliners in the News

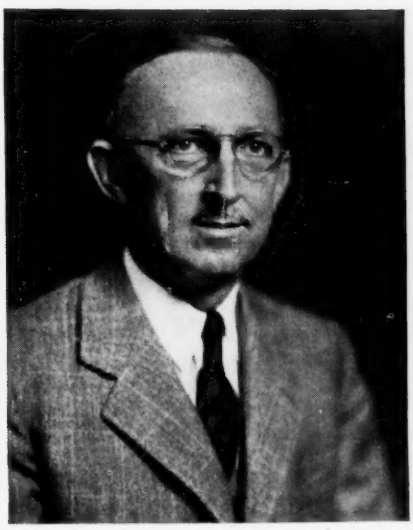


Gustav Egloff, director of research of Universal Oil Products Company, was recently awarded a Columbia University Medal of Merit as an outstanding scientific and technological leader in industry.



John V. N. Dorr was given the honorary degree of Doctor of Science at the recent Commencement exercises of Columbia University in recognition of his contributions to metallurgical, sanitary and chemical engineering.

Raymond R. Ridgway, Associate Director of Research for Norton Company was awarded the Jacob F. Schoellkopf Medal for 1943.



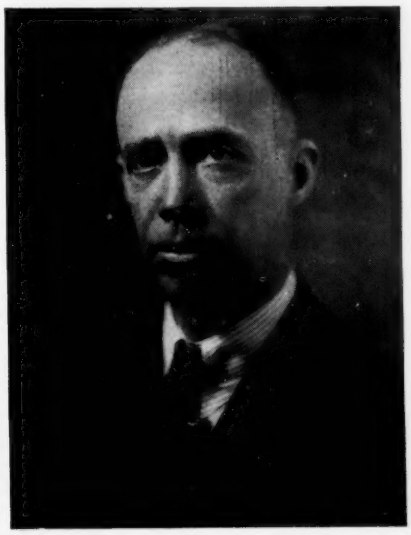
Robert M. Burns, assistant chemical director of Bell Telephone Laboratories has been elected president of the Electrochemical Society.

Dr. Robert F. Ruthruff has been appointed director of research for Sherwin-Williams and its allied companies.

Dr. Florence Seibert (right) is the first recipient of the $2,500 achievement award of the American Association of University Women. Dr. Katherine McHale, General Director of the A.A.U.W. cited Dr. Seibert for her research work in tuberculosis.

J. R. Donald has been awarded the Order of the British Empire by the King, in recognition of his accomplishments as Director-General, Chemicals and Explosives Branch, Canadian Department of Munitions and Supply.

Donald K. Ballman has been named head of Dow's recently formed Service and Development Division for development and application of new chemical products for use now and after the war.



J. N. Curlett, McCormick & Co., president of the N.A.I.D.M.

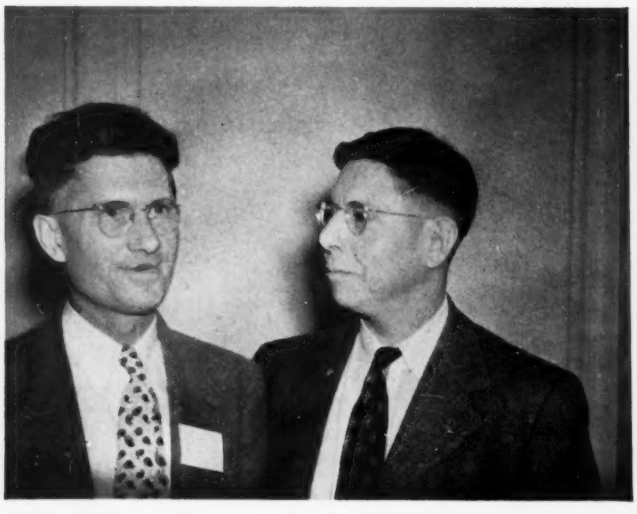
N. A. I. D. M. Holds War

A program packed full of serious discussion of war problems facing manufacturers of disinfectants, insecticides and wax products, featured the 29th Mid-Year meeting of the National Association of Insecticide and Disinfectant Manufacturers held June 7 and 8 in Cleveland. Moved to the Lake Erie city at the last minute when previously arranged quarters in Toronto were suddenly commandeered for a Canadian war conference, the meeting did not appear to suffer in attendance.

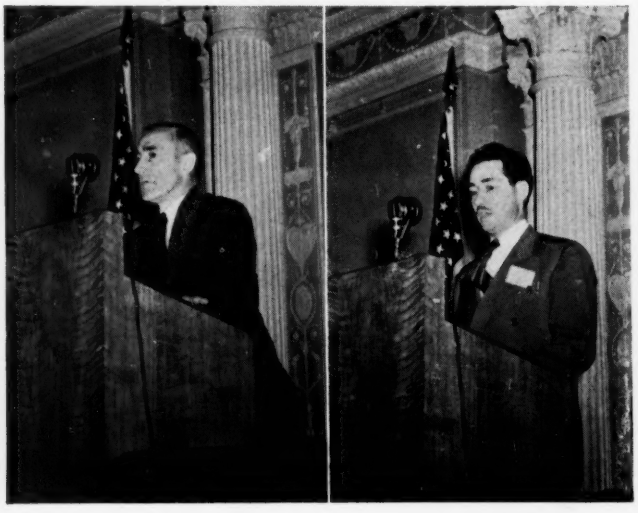
H. W. Hamilton, White Tar Division of Koppers Co. and secretary of N.A.I.D.M.; and P. H. Groggins, chief of the Chemicals Division, U. S. Department of Agriculture, who spoke on "Insecticide Needs and Supplies."

WAAC Captain Ringold provided a pleasant interlude in the Tuesday morning session when she addressed the assembly on behalf of her organization. She is shown with Friar Thompson, Hercules Powder Co., and H. W. Hamilton.

F. C. Nelson, Stanco, Inc., chairman of the Cattle Sprays Committee of N.A.I.D.M.; and Henry A. Nelson, Cleveland Supply Co., first vice-president of N.A.I.D.M.



W. J. Zick, Stanco, Inc., left, introduced John D. Conner, right, new Washington representative of N.A.I.D.M., who reviewed the Washington situation.



Problems Conference in Cleveland

The most urgent problem of the day was pyrethrum, virtually none of which is available for civilian insecticides. Government representatives speaking on the program held out no hope whatever for any increase in the amount available for civilian use this year.

Other highlights of the meeting were discussions of the insecticide sprayer situation and of the new floor wax specifications being drawn up by the Association.

J. L. Brenn of Huntington Laboratories, Inc., led the discussion on drums.

Above, left to right: G. A. Bowden of A. S. Boyle Co. and R. B. Trusler of Davies-Young Soap Co. participated in the symposium on floor wax problems. Melvin Goldberg of the Insecticides and Fungicides Unit of the War Production Board spoke on some of the problems of WPB. John Powell of John Powell & Co., and A. E. Badertscher of McCormick & Co., participated in the symposium on insecticide problems.

Below, left to right: E. G. Klarmann, Lehn & Fink Products Corp.; G. F. Reddish, Lambert Pharmacal Corp.; and Jack E. Varley, Baird & McGuire, Inc. participated in the symposium on disinfectant problems. F. E. Bohman, president, National Pest Control Association; and L. J. Leininger, president, Cenol Company, Inc. were interested attendants.

American Institute of Chemists Meet in Chicago

The American Institute of Chemists held its 21st annual meeting on May 15, at the Edgewater Beach Hotel in Chicago. The one-day meeting was given over largely to business meetings and election of officers in the morning.

In the afternoon, sessions were devoted to topics of importance to both the civilian and military problems in wartime. Speakers and their topics were: Bruce K. Brown, assistant deputy petroleum coordinator, "Petroleum in the War"; Dr. Robert J. Moore, Bakelite Corporation, "Synthetic Resin Plastics"; Dr. H. E. Robinson, research laboratories of Swift & Company, "Meats in the War"; and Dr. David Klein of Wilson & Company, "Vitamins in the War."

In the evening a testimonial dinner was tendered Dr. Walter S. Landis of the American Cyanamid Company for outstanding service to the science of chemistry.

Officers elected at the meeting were: Donald B. Keyes, Office of Production Research and Development, WPB; Raymond E. Kirk, Brooklyn Polytechnic Institute and Frank G. Breyer, Singmaster and Breyer as Councilors for three year terms. Frederick A. Hessel, Montclair Research Laboratories was designated treasurer.

Dr. Gustav Egloff, right, president of the American Institute of Chemists, presented Dr. Landis with the Institute Medal for outstanding service to the science of chemistry.

Below: A group of the A. I. C. councilors, left to right: Maximilian Toch, who spoke on "Landis the Man" at the dinner, E. R. Allen of E. I. du Pont de Nemours & Co., Inc., Robert J. Moore of the Bakelite Corp., W. T. Reid of Rutgers University, Miss Vera Kimball, editor of the Chemist; Harold S. Neiman, secretary of A.I.C.; Donald Price, vice-president of A.I.C.; Dr. Gustav Egloff, president of A.I.C., and Walter J. Murphy, retiring treasurer of A.I.C.

C. K. McLane of the University of Wisconsin who was awarded one of the medals given by the Institute.

VIGILANCE

THE statue of the "Minute Man" at Lexington immortalizes the first American Soldier. Yet it is not a martial figure. It shows us merely a country lad, clad in home-spun cloth, and armed with a squirrel gun. It shows us a man who, reared in the quiet of the New England countryside, was born and trained for peace — but who was all the more vigilant to defend it. And in this the "Minute Man" is the American of today — and his vigilance is ours, to defend the freedom, the peace and the right to happiness of thousands of Lexingtons and Concords.

AMERICAN FLANGE & MANUFACTURING CO. INC., 30 ROCKEFELLER PLAZA, NEW YORK

TRI-SURE PRODUCTS LIMITED, ST. CATHARINES, ONTARIO, CANADA

Tri-Sure

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CLOSURES

Photograph courtesy T.W.A. Airlines

Tri-Sure News

NUMBER 6 ★ 30 ROCKEFELLER PLAZA, NEW YORK, NEW YORK ★ JUNE, 1943

A. DRUM SERIOUSLY INJURED IN ACTION

'Can't Take It Any More," Says the Battered Veteran

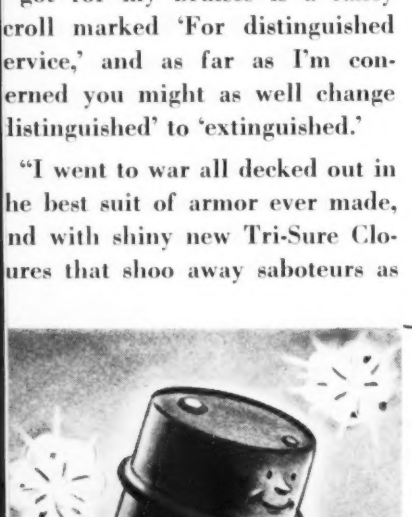
A. Drum, one of the large family f Drums that are playing a promnent part in the war effort, has been reported completely "hors de ombat" as a result of injuries eceived in the pursuit of his duties lelivering oil, gasoline and chemials to the front.

" 'Keep the Drums rolling,' is a well idea," remarked A. Drum, as he battered old veteran rested unomfortably on his cot, "but they olled me right into a hospital. All got for my bruises is a fancy croll marked 'For distinguished ervice,' and as far as I'm conerned you might as well change listinguished' to 'extinguished.'

"I went to war all decked out in he best suit of armor ever made, nd with shiny new Tri-Sure Cloures that shoo away saboteurs as though they were flies, and prevent me from losing any of the stuff my old Uncle Sam counts on me to deliver.

"But people must have thought I was a bomb the way they kept dropping me. They put more dents and holes in this old torso of mine than our planes left in Rotterdam. We Drums are a tough tribe, but there's a limit to what we can take. And, by golly, these days America needs the Drums—every one of 'em.

"We may not be doing any actual fighting, like the Guns, the Planes and the Tanks—but, honestly, what would those guys do without us? So take it easy on us Drums. We have to deliver the goods — and keep on delivering 'em. And, remember, some of us Drums want to be on hand to help supply our boys when they camp in Tokio and Berlin!"

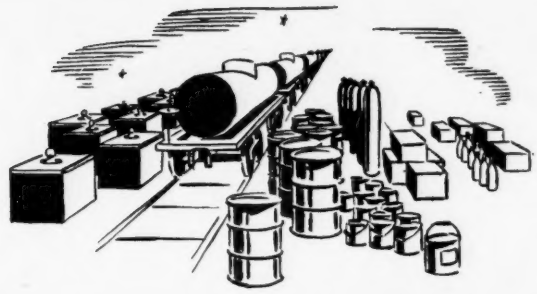


Do Your Part To "Keep The Drums Rolling"

The Selective Service Act does not include the drafting of Drums; the government isn't calling up new ones whenever they are needed. The old ones—the veterans that Uncle Sam counts on to deliver the oil, gasoline and chemicals that are vital to America's war effort —have to be kept in service as long as possible. And every firm in the oil and chemical field can help. Remember that your returnable containers cannot be replaced. So do your part to "Keep the Drums Rolling" as fast as possible and as long as possible.

√ HANDLE THEM CAREFULLY
√ EMPTY THEM PROMPTLY
√ RETURN THEM QUICKLY

AMERICAN FLANGE & MANUFACTURING COMPANY INCORPORATED
TRI-SURE PRODUCTS LIMITED, ST. CATHARINES, ONTARIO, CANADA



PACKAGING & CONTAINER FORUM

Fibre Drums Allocated

The War Production Board began allocating shipments of cylindrical fibre shipping drums by manufactureers on June 16, 1943, to make sure that drums are channeled to the most essential uses

Under an important order (M-313) issued May 21, WPB will allocate shipments of about 30 manufacturers. Current demand for fibre drums is far in excess of the supply. Efforts are being made to increase production and by autumn it is hoped that supply and demand will be balanced.

Of the total demand for fibre drums, approximately 60 per cent usually is from the chemical industry, including paint; 20 per cent from the petroleum industry; 7 per cent from the food industry; and 13 per cent from other industries, such as shoe finishes, inks, abrasives, and mold materials.

The order applies to the cylindrical fibre shipping drums of the types known as "drums" and "pails". These are made with a body of paperboard and ends of paperboard, steel (28 gauge or heavier), wood, or any combination of such materials. They are acceptable for shipment without covering containers, upon conforming with carrier and Interstate Commerce Commission regulations.

Drums and pails of less than one-gallon capacity are excluded from the order. Fibre containers known as "cans" and "tubes" are also excluded.

Beginning June 16, no manufacturer may ship fibre drums to any purchaser, except as specifically authorized by WPB on Form PD-881. This applies notwithstanding any preference rating already received.

Manufacturers are required to file Form PD-881 periodically with WPB including among other required data a listing of "qualified orders" requiring shipment during the next succeeding month. The first report, covering the period June 16 through July 31, is due on June 3. Subsequent reports are on a monthly basis.

A "qualified order" is a purchase order bearing information as to the purchaser's proposed use of drums, including product to be packed, amount of drums needed for each product, and desired receiving date. The drum manufacturer will need this information to prepare his Form PD-881.

The forms, and any other communications concerning the order, should be addressed to the Containers Division, WPB, Washington, D. C., M-313.

An indirect 60-day inventory restriction is placed on purchasers of fibre drums. No person may order any type of fibre drum for delivery on any date if receipt of the drums on that date would increase his estimated inventory of that type of drum to more than 60 days' requirements.

Return Drums Promptly

Importance of getting returnable containers back to suppliers promptly in order to insure continued delivery of essential chemicals and allied products in wartime was recently stressed in a joint statement by the Chemicals and Containers Divisions of the War Production Board.

The statement pointed out that the request for prompt return of containers by the users applies to steel drums that formerly were considered non-returnable, fiber drums, slack wood barrels, tight wood barrels and cylinders.

The Chemicals and Containers Divisions suggested that each user get in touch with his supplier to find out whether the supplier wants the containers back before making any other disposition of them. Containers should not be used by the purchaser of the chemical for other purposes without the specific permission of the supplier to do so, it was pointed out.

The following suggestions to users for returning drums were offered: 1. Have your supplier pick up your empty drums when delivering full drums, or return empty drums to the works or warehouse from which received. 2. Deposit charge will be refunded upon receipt of drums in good condition. 3. Do not use pressure to empty drum. 4. Drums should be kept clean, but do not rinse. 5. Do not use for storage or shipment of any other material. 6. In returning drums, replace and securely tighten both bungs. 7. In returning open-head drums, do not interchange lids or lever locks. Be sure to return lock with drum. 8. Use proper size valves in order to prevent stripping of threads. 9. Do not tighten bung plugs excessively as this may rupture flange threads or loosen the spud which would ruin the drum. 10. Use faucet or spigot provided with straight threads equipped with resilient gaskets. Faucets equipped with tapered threads may turn the spud in the drum, thereby causing leaks, with the possibility of ruining the drum. 11. If possible, store drums under cover to prevent rusting.

Use Sticker on Return Drums

At the recent meeting of the National Insecticide and Disinfectant Manufacturers Association in Cleveland one of the representatives of the Office of Price Administration suggested what appears to be a good idea for companies who are having trouble in retrieving their returnable drums. His suggestion was the use of a sticker, with the following wording, on each drum. "Resale of this drum in violation of OPA regulations is against the law".

To Study Paper Sacks

Possibility of expanding the use of paper shipping sacks for packing various chemicals was discussed at a meeting of the Paper Shipping Sack Industry Advisory Committee and War Production Board officials in Washington recently.

The committee was told that such bags can be used satisfactorily for many chemicals which heretofore have been packaged in metal or fiber drums. These drums are critical now, and the packaging conversion will save large quantities of them. The supply of paper shipping sacks is not as critical as that of drums.

The Chemicals Division has established "task groups" representing various segments of the chemical industry to determine what chemicals can be packed in paper and the paper requirements for those chemicals.

Packaging equipment problems will be taken into consideration in determining how far the chemical industry can go in converting to paper, and a thorough study will be made as to what new facilities will be needed. It is known that paper packaging is already being used for some chemicals, such as tri-sodium phosphate and alkali.

The Containers Division also plans to establish "task groups" representing the

bag industry to consider the technical problems of making bags to meet the new uses.

Glass Container Estimate

At a recent meeting with WPB officials in Washington, the Glass Container Manufacturers Industry Advisory Committee said that the production of glass containers in 1943 can be increased by about 8 per cent over 1942, if manpower, transportation and an adequate supply of materials are available. Granted adequate supplies, the committees estimated that 1943 production will be 92,500,000 gross.

Steel Drum Preference Ratings

The WPB has issued advice on the correct procedure for obtaining preference ratings required prior to submitting application for authorization to purchase new steel shipping containers. The War Production Board allocates shipments of new steel shipping containers under Conservation Order M-255. However, before the Containers Division can authorize users to purchase the containers, a preference rating must be assigned. Preference ratings for containers to be used by the armed forces or other government agencies are assigned by these agencies. Users who now have a preference rating should make application for authorization to purchase new steel drums on form PD-835.

Wide-Mouth Glass Container Ceiling Lowered

Prices of wide-mouth glass containers sold to commercial packers have been rolled back by OPA in a new regulation, No. 382 which became effective May 27.

Specific dollar and cents ceiling prices were established in the order for all types of wide-mouth glass containers at levels that prevailed July 1, 1941, replacing the ceilings which had been established at October, 1941 levels.

Glass Container Quota Plan

In a recent meeting with WPB officials in Washington representatives of the Glass Container Manufacturers Industry Advisory Committee recommended a temporary plan to balance the supply and demand of new glass containers to assure an adequate supply for the coming packing season.

Because of the fact that glass container demand is exceeding the industry's ability to produce by about 20 percent, the committee recommended strict temporary control over delivery, acceptances, and use of new glass containers.

Under the proposed control a quota, based on a percentage of use during some base period, would be placed on the amount of containers that could be accepted by certain users during the summer months. A similar quota would be placed on the number of containers a manufacturer could deliver to certain users.

Open Billing for Boxes

In the recently issued Order 2 to Section 1499.19 of the General Maximum Price Regulation, effective June 3, 1943 the Office of Price Administration authorized manufacturers of wire-bound boxes and crates to make sales on an open billing basis, adjusting prices later to new ceilings to be established in a specific price regulation covering such products.

In announcing the order the OPA said: "To permit wire-bound box manufacturers to continue production pending issuance of a schedule of maximum prices, open billing has been authorized so that the prices of wire-bound boxes may remain in line with those of box veneer."

Steel Barrel and Drum Statistics for First Quarter

Table 1. Heavy Types (Number of Barrels and Drums)[1]

Year and Month	Production	Shipments	Stocks, End of Month	Total Unfilled Orders, End of Month
1943[2]				
January	1,269,410	1,279,435	47,508	3,447,921
February	1,574,368	1,595,311	44,765	4,139,448
March	2,005,333	1,990,332	59,751	4,200,839
Total (3 months)	4,849,111	4,865,078	.....	.....
1942[2]				
January	1,951,599	1,953,648	36,455	2,149,272
February	1,845,350	1,847,720	33,692	2,230,376
March	2,415,811	2,420,483	29,020	1,892,849
Total (3 months)	6,212,760	6,221,851	.....	.....
Total (year)	21,254,429	21,234,721	.....	.....
1941[2]				
January	1,454,298	1,443,945	62,771	370,172
February	1,034,681	1,045,853	51,599	276,013
March	1,072,308	1,076,523	47,384	314,504
Total (3 months)	3,561,287	3,566,321	.....	.....
Total (year)	18,313,596	18,332,143	.....	.....

[1] Steel barrels and drums (except beer barrels) of 19-gage or heavier steel, and steel barrels and drums made wholly or partly of 20-gage, when of other than open-head construction; also grease drums of 100-lb. capacity when made of 20-gage or heavier steel.

[2] Monthly capacity for 1943 was 1,936,000 barrels (one shift) and is based on the total number of steel barrels and drums which can be made with existing equipment in 25 working days of one 8-, 9-, or 10-hour shift, whichever is the normal operation of the respective plants. Monthly capacity for the period January 1941 to December 1942, inclusive, was 1,824,500 barrels (one shift). As some manufacturers operated more than one shift, this results, for certain months, in a ratio of production to capacity in excess of 100%.

Table 2. Light Types (Number of Barrels and Drums)[1]

Year and Month	Production Total	Production Welded side seam	Production Lock side seam	Shipments Total	Shipments Welded side seam	Shipments Lock side seam	Unfilled Orders, End of Month
1943							
January	250,375	61,194	189,181	262,343	88,501	173,842	776,815
February	193,530	60,823	132,707	201,726	72,992	128,734	722,654
March	204,073	61,585	142,488	222,031	70,756	151,275	776,605
Total (3 months)	647,978	183,602	464,376	686,100	232,249	453,851	.....
1942[2]							
January	492,630	120,914	371,716	462,945	114,841	348,104	1,281,112
February	499,614	188,002	311,612	536,091	204,067	332,024	1,203,793
March	540,124	178,381	361,743	528,312	171,449	356,863	1,034,962
Total (3 months)	1,532,368	487,297	1,045,071	1,527,348	490,357	1,036,991	.....
Total (year)	5,053,339	1,306,374	3,746,965	5,114,625	1,334,492	3,780,133	.....
1941[3]							
January	256,465	69,111	187,354	255,824	69,596	186,228	60,164
February	239,613	74,320	165,293	238,330	73,407	164,923	58,756
March	264,624	71,730	192,894	265,105	72,410	192,695	71,571
Total (3 months)	760,702	215,161	545,541	759,259	215,413	543,846	.....
Total (year)	3,751,627	1,189,646	2,561,981	3,757,565	1,191,819	2,565,746	.....

[1] Steel barrels and drums (except beer barrels) of steel lighter than 19-gage, excepting steel barrels and drums made wholly or partly of 20-gage, when of other than open-head construction; also grease drums of 100-lb. capacity when made of steel lighter than 20-gage.

[2] Not strictly comparable with January and February 1943, since statistics for these months include data for 4 additional plants.

[3] Not strictly comparable with 1942 and 1943. The statistics for 1943 include data for 11 additional plants and for 1942 for 7 additional plants.

Ever Eat RAW FISH?

U. S. Navy Life Boats now carry CANNED Fishing Tackle!

RAW FISH may not sound very palatable . . . but it can mean the difference between life and death to a shipwrecked sailor.

So the United States Navy is now equipping life boats and life rafts with *cans* containing fish hooks, lures, lines, jigs, spear and gaffs . . . to be used to catch fish to supplement emergency rations.

This emergency fishing kit is supplied not only to the Navy, but also to the U. S. Maritime Commission by the Edward K. Tryon Company of Philadelphia . . . and we're proud to say much of it is packed in Crown Cans specially designed for the job.

Cans for packing fish is an old story. Canned fishing tackle is one of the new jobs the war has brought to Crown Can!

CROWN CAN COMPANY, PHILADELPHIA • NEW YORK • *Division of Crown Cork & Seal Co.* • *Baltimore, Md.*

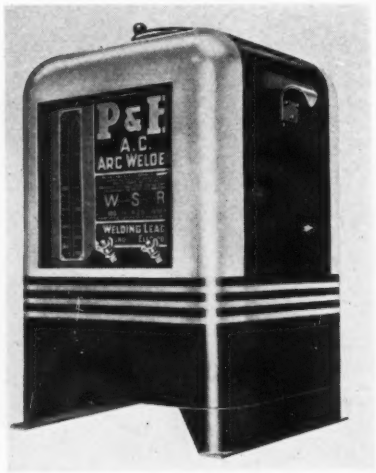
★ ★ CROWN CAN ★ ★

NEW EQUIPMENT

For a quick, convenient method of requesting additional information on these new equipment items, use the post card on sheet opposite page 785.

New A. C. Welders QC254

Harnischfeger Corporation has introduced a complete new line of industrial A. C. arc welders. Engineered and built for industrial service, these machines are being made in 7 heavy duty and 4 intermittent duty models with a range of capacities for handling production welding



under continuous operation. The new line features the recently adopted "WSR" (Welding Service Range) ratings which show the actual minimum to maximum output of usable welding current. Specific "WSR" ratings of heavy duty models are: 50 to 270 amps., 60 to 375, 90 to 500, 100 to 625, 125 to 750, 150 to 900, and 200 to 1200—of intermittent duty models: 20 to 185 amps., 20 to 235, 20 to 285, and 20 to 335. Setting and control of current throughout complete welding service range involves one simple, easy-to-operate adjustment. Improvements in the control are claimed by the company to make it creep-proof.

Motor Starter QC255

A new motor starter has been added to its industrial control line by the Allis-Chalmers Manufacturing Company. Designed for low first cost, the new starter designated as type H is a metal-enclosed structure similar to metal-clad switchgear. High interrupting capacity disconnecting-type fuses are utilized in combination with a heavy duty oil switch in the new starter.

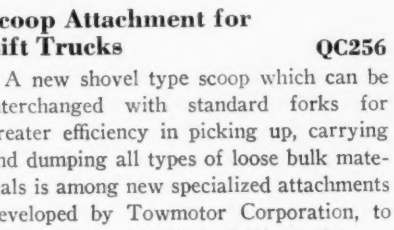
Type H starters have been developed for both induction and synchronous-type motors rated up to 1000 hp. at 2300 volts and 1750 hp. at 4600 volts, 3-phase, 60 or 50 cycles. Their usages cover: full or reduced voltage starting, dynamic braking, reversing and special applications.

Short circuit protection up to 160,000 kva at 2300 volts and 320,000 kva at 4600 volts eliminates the need for a backup breaker within these kva ratings. Disconnecting type fuses combining high interrupting capacity with fast-clearing action, hold short circuit currents to safe values which do not damage the control. Fuses operate only under actual short circuit conditions and will not blow unnecessarily.

The new Type H starters protect motors from sustained overloads, locked rotor condition, single phasing and overloading caused by too frequent starting by means of termal overload relay accurately calibrated.

Scoop Attachment for Lift Trucks QC256

A new shovel type scoop which can be interchanged with standard forks for greater efficiency in picking up, carrying and dumping all types of loose bulk materials is among new specialized attachments developed by Towmotor Corporation, to increase the versatility of lift trucks.



Available in capacities from 8 to 25 cubic feet, the scoop is designed to speed handling of such materials as ore, glass and metal scrap, foundry sand and bulk chemicals. In many instances small castings and forgings when handled in large quantities in the rough stage may be economically moved, stored and loaded by this new method.

Manually controlled, the scoops can pick up or dump materials at any point within the lift range. Resetting to digging or carrying position after dumping is accomplished by lowering to floor level until spring-operated catches automatically take hold.

An optional feature is an anti-spilling device which fits over the front lip of the scoop and permits transporting full loads of loose material at good speed over rough surfaces. The anti-spiller is easily pulled out of the way for loading, and remains in a fixed position during dumping, so that loads can spill out freely beneath it.

Safety Siphon QC257

The Central Scientific Co. has announced a new safety siphon for transferring carboy acids or other dangerous liquids. Its construction provides for "safety first" in handling such liquids.

This new Safety Siphon eliminates all pressure by employing an improved and safe principle allowing a free flow of liquid with instantaneous control. Made entirely of saran, it is not only acid and corrosion resistant, but is unusually flexible while retaining a high tensile strength.

Electronic Time Meter QC258

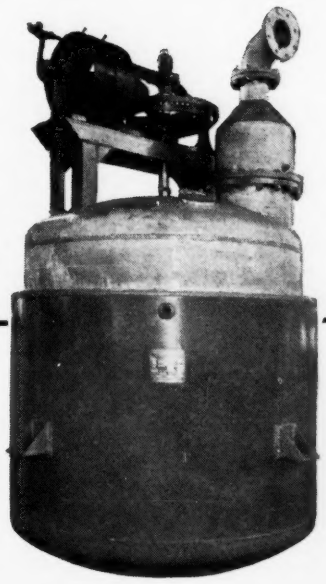
A new electronic time-interval meter for accurately measuring extremely short intervals, as low as 100 microseconds, has been announced by General Electric Company. Specifically, the meter is designed for measuring the time interval between two events which can be converted into electrical impulses, such as the elapsed time between the closing of two controls; between two impulses to a phototube; and between an electrical impulse and a light impulse.

Consisting of two units—an electronic panel and a phototube with its preamplifier stage—the meter has eight ranges, selected by means of a tap switch so that any time interval of a length between .0001 second and 3 seconds can be measured. A standard indicating instrument calibrated in milliseconds gives a direct reading of the time interval measured.

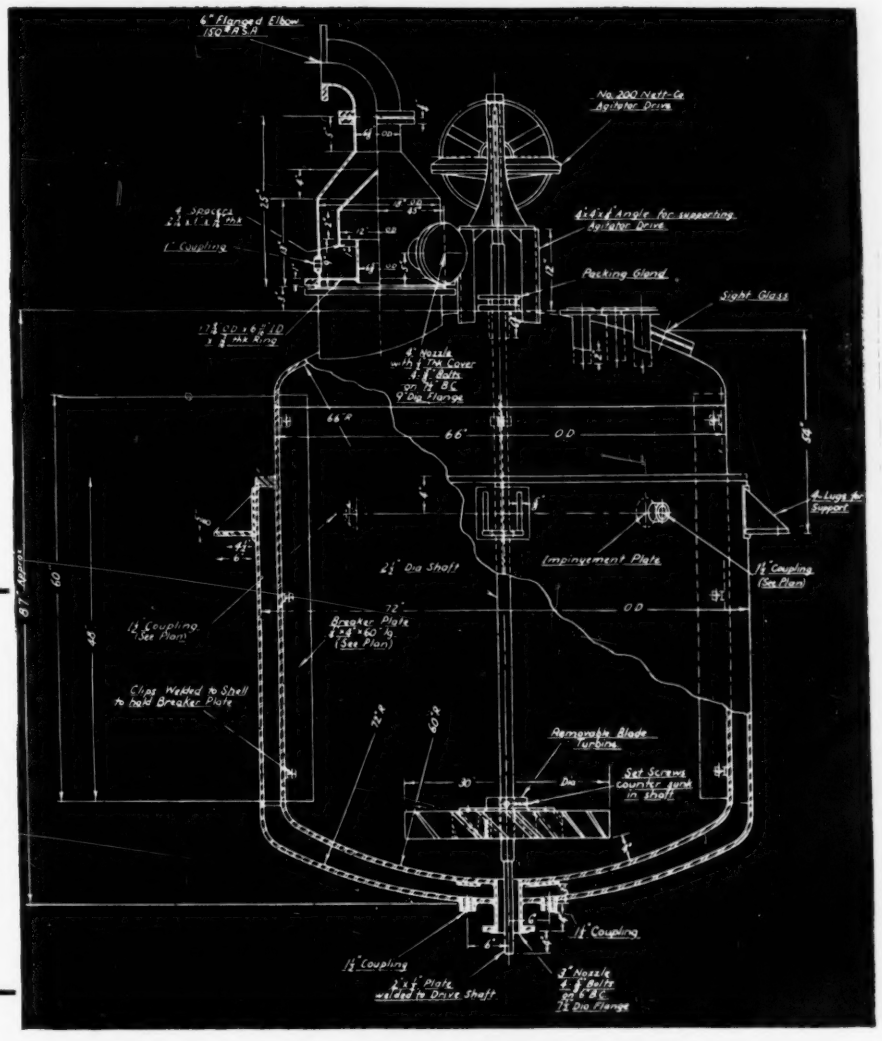
The normal input signals consist of changes of light intensity falling on the phototube or the making of external electrical contacts. In the former case, light

FABRICATED OF STAINLESS STEEL

—to withstand the destructive action of corrosive chemicals



PATTERSON STEAM-JACKETED MIXING KETTLE—A special type jacketed kettle fitted with a turbine-type mixer, constructed throughout of No. 316 stainless steel — including all metal in contact with contents of the kettle. Shell and heads constructed of stainless steel ⅝" thick. Steam jackets of carbon steel. Built for a working pressure of 75 lbs.


6" Flanged Elbow 150# A.S.A.
No. 200 Nett-Ge Agitator Drive
4 x 4 x ½ Angle for supporting Agitator Drive
Packing Gland
Sight Glass
4" Nozzle with 1" Tap Cover 4 - ¾" Bolts on 7¼" B.C. 9" Dia Flange
66" O.D
4 Lugs for Support
4½" Dia Shaft
Impingement Plate
1½" Coupling (See Plan)
1½" Coupling (See Plan)
Breaker Plate ¼ x 48" x 48" (See Plan)
Clips Welded to Shell to hold Breaker Plate
Removable Blade Turbine
Set Screws Counter sunk in shaft
1½" Coupling
1½" Coupling
3" Nozzle 4 - ¾" Bolts on 6" B.C. 7½ Dia Flange
½" x 6" Plate welded to Drive Shaft

A. S. M. E. APPROVED DRAWING OF KETTLE ILLUSTRATED ABOVE—This type of kettle may be adapted to straight mixing, or to a combined mixing and simple distillation problem. The vapor-dome is ideal for separating entrained moisture from a distillate vapor.

EST. 1880

PATTERSON-KELLEY HEAT EXCHANGE ENGINEERS

THE Patterson-Kelley CO., INC.

113 WARREN ST., EAST STROUDSBURG, PA.

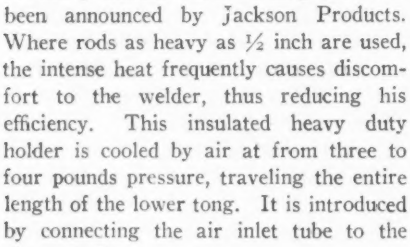
MANUFACTURERS FOR THE REFINING AND PROCESS INDUSTRIES

values as low as 1/100 lumen, or an intensity of approximately 1.4 foot-candles, can be used on the photo-tube and still result in satisfactory performance.

Operating from a 115-volt, 60-cycle lighting circuit, the meter is stabilized so that normal line-voltage variations do not affect its accuracy, which is two per cent of full scale value, or one scale division. The meter will continue to indicate the time interval after measuring, with a drift of less than one division per minute. When another reading is required, a push button immediately clears the dial.

Cooled Electrode Holder QC259

An air cooled electrode holder for use on heavy metallic arc welding jobs has been announced by Jackson Products. Where rods as heavy as ½ inch are used, the intense heat frequently causes discomfort to the welder, thus reducing his efficiency. This insulated heavy duty holder is cooled by air at from three to four pounds pressure, traveling the entire length of the lower tong. It is introduced by connecting the air inlet tube to the plant air line.



Lower Tong, Illustrating Air Cooling Feature

The holder is made of special high conductivity copper alloy, with deep-slotted jaws that grip rod tightly and hold it at correct angle. A dependable solder cable connection is provided.

Level Control QC260

Photoswitch Incorporated has announced a new series of electronic level controls designed particularly for hazardous location mounting. The equipment is supplied for use with conductive liquids of an explosive nature.

Two models, Types P15NHX and P15NLX are available for high and low-level control respectively. Each is furnished as a complete unit in a vapor-proof cast-iron housing for direct tank installation. A one-inch nipple screws into the hub at the bottom of the control housing, and is screwed into a one-inch flange on top of the tank. From the control, a probe rod projects through the nipple and into the tank to the desired depth. The probe is supplied as standard in one-half inch diameter brass. Other metals are available if required.

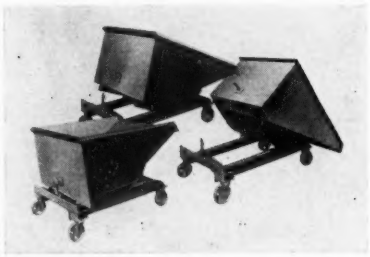
High-level control is accomplished when liquid rises and contacts the probe tip; low-level control, when liquid drops below the probe tip. Both models incorporate a safety feature providing for operation of the relay in case of current or tube failure.

The relay connections of Types P15-NHX and P15NLX are those of a single-pole double-throw switch. The relay contacts are rated at 1000 watts A.C. and may govern in the output signal lights, pump motors, etc.

Of particular interest is the use of Type P15NHX to control the level of any conductive liquid, such as water or acids, in tanks of gasoline, oil, or similar non-conductive materials. In this application the control remains inoperative while the probe is immersed in the non-conductor, but when the conductive liquid rises to the probe tip, the relay operates. This application is especially pertinent to the petroleum and chemical industries, where it is frequently necessary to provide a safeguard against too much condensation accumulating at the bottom of a tank, or to indicate when a conductive liquid rises to a definite point.

End Dump Truck QC261

A new model automatic end dump hopper on casters has been announced by H. L. Pitcher Company, sales agent for the products made by Rose Manufacturing Company. When the latch is released and the load is dumped, the bucket is so balanced that it automatically returns and latches in position when reloaded. It rides empty in the balanced position.

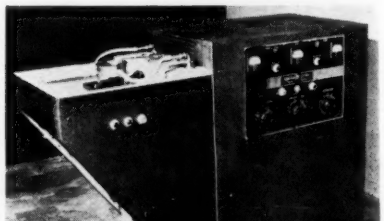


Mounted on heavy duty all steel casters, it is an adaptable unit for the handling of sand, gravel, coal, stampings, small castings and all kinds of scrap and refuse. It is built of structural steel and heavy plate, and is designed to fit any kind of lift truck but may be built to specifications as to capacity and yardage content.

Electronic Heaters QC262

A line of electronic heaters for high-frequency induction heating of metal parts for brazing, soldering, and selective heat treating has been announced by the Industrial Heating Division of the General Electric Company. Essentially power oscillators which convert 60-cycle power to high-frequency power at approximately 500,000 cycles, the electronic heaters are available in two standard sizes, one having an output of 5 kw. and the other an output of 15 kw.

The design of the new line is based on experience with more than 100 installations of these heaters in General Electric's own plants. Simple circuits are employed and the necessary electronic tubes, controls, and other equipment are arranged in compact, completely enclosed cabinets. The use of conservatively rated elements reduces maintenance to the periodical replacement of tubes, which when properly applied have an average life expectancy of 5000 to 10000 hours and more.

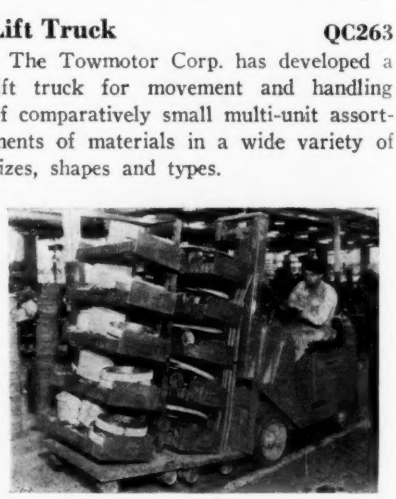


Attached to the electronic heater is a suitable work table with the necessary water-cooled coil or coils connected to the heater terminals. The coils can be fabricated in different shapes, depending on the work to be done.

The operation of the equipment is simple. With the inductor coil connected to the terminals of the oscillator and the timer set, the filament switch is turned on and, if necessary, the filament voltage adjusted. Next the predetermined transformer tap on the dial switch is selected and the grid rheostat set. The operator then turns the selector switch for automatic operation, and repeats heat after heat merely by locating the piece in the inductor coil and initiating the automatic cycle by operating a push button.

Lift Truck QC263

The Towmotor Corp. has developed a lift truck for movement and handling of comparatively small multi-unit assortments of materials in a wide variety of sizes, shapes and types.



This flexible "mass-movement" system has proved especially efficient in handling small parts from stock room to inspection, machining and assembly stations. Racks are readily removable and adjusted to standards to accommodate many different types of loads.

PLANT OPERATIONS NOTEBOOK

By W. F. Schaphorst

Stop Vibrations and Noise

These three sketches show how to take care of machinery that is likely to vibrate and cause noise nuisance. One of the most effective modern methods, as indicated in the sketches, is to isolate shaky machines from the building or from the ground by means of a strong resilient material. Natural cork is generally regarded as best for this purpose. Cork has a natural period of vibration which is invariably different from that of any machine, which fact is of great importance. Cork is also almost perfectly elastic over a long period of years, which, too, is important. That is, cork does not gradually yield under pressure as do most other materials. Cork is also highly resistant to rotting, warping, swelling, and shrinking. From almost every viewpoint natural cork is therefore an ideal material for machine isolation. Sometimes the cork is placed directly under the machine on top of the foundation as shown in Fig. 1. At other times the foundation

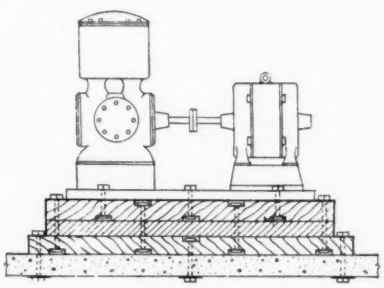


Figure 1

itself rests on the cork as shown in Fig. 2, depending on conditions. Thus Fig. 1 shows how to isolate an electrically

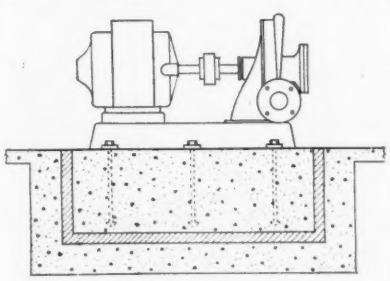


Figure 2

driven unit, the unit being completely tied to a concrete slab in such a way that vibrations cannot be transmitted to the building, and yet the machine cannot jump off the base.

Fig. 2 shows how to isolate a machine without secondary tieing bolts such as are shown in Fig. 1. In other words, the concrete base is here placed in a pocket lined with cork. This is usually a very satisfactory method of isolation.

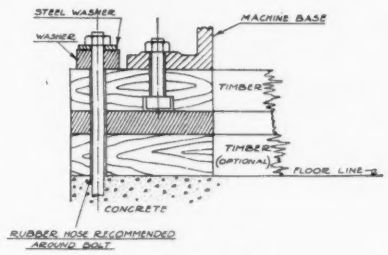


Figure 3

Fig. 3 shows in greater detail how the bolts may be isolated and applied. The "rubber hose kink," for further isolating long through bolts, is a good one to bear in mind. An objection to rubber is that it soon loses its elasticity, but for this purpose of merely surrounding a bolt that is fixed in position, that fault is of but little importance.

Through-tieing bolts are important as their elimination means that there is nothing to prevent the machine from bouncing around and dragging the top slab and the machine itself on the floor.

Length of Material on Drum

Drums and reels are commonly used for storing round rope, cables, wire, hose, etc., and it is often desirable to ascertain the total length remaining on the drum either by computation or measurement.

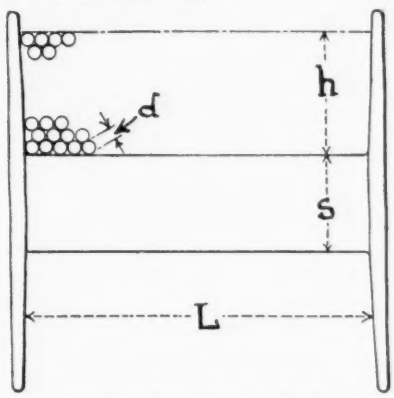
Inasmuch as this writer had never seen a satisfactory formula for computing the length of these reeled materials, he tried his hand at devising such a formula a number of years ago. As a result he now has what he believes to be the simplest and most practical formula—better than any heretofore published. It is more accurate than previously published formulas.

When a rope, cable, or wire winds upon a drum or reel, it naturally assumes a position such as has been indicated in the sketch. That is, the rope winding on top of the first layer seeks the "valleys," between the turns of the first layer, and in this way the maximum length is wound onto the drum. This is particularly true if the material is taut.

On the other hand it must be borne in mind that when these materials are reeled the layers are alternately right and left-hand spirals, consequently they cannot "bottom" as beautifully over the entire surface as indicated in this sketch. If bottoming were perfect the factor in the formula would be 0.3 but in actual practice it is found that 0.262 gives best results, hence 0.262 is used in the formula.

To determine the number of feet of material on a drum, properly wound, four measurements are necessary as shown in the sketch and as follows:

h—the depth of material on the drum, inches;
s—the diameter of the drum, inches;
L—the length of the drum, inches; and
d—the diameter of th: rope, wire, or cable, etc., inchess.



This is the rule: "To the depth of the rope or cable "h," add "s," the diameter of the drum. All measurements must be in inches. Multiply that sum by the depth "h." Then multiply by the inside length of the drum marked "L" in the sketch. Divide that by the square of the diameter of the rope or cable "d" and lastly, multiply by 0.262. The answer is the length in feet."

Take, for example, a drum in which h is 10 in.; s is 20 in.; L is 50 in., and the diameter of the rope d is ½ inch. How many feet of rope on the drum? Apply the above rule and it will be found that the answer is 15,720 feet.

Foot Guard on Truck

As a safety measure, electric trucks at a Westinghouse plant have been provided with foot guards. The guard is so constructed as to completely encircle the two pedals used for operating the truck brakes.

Between the Lines

(*Continued from page 672*)

army is getting a supply from some source, and synthetics would seem to be the answer again. In short, Germany can not choose between raw materials, according to whether one is more complicated or more costly, or commercially impractical. Right now, if a vital material is only obtainable synthetically by Germany, that country must get it.

In fact, not only in Germany, but in other countries abroad, lignite conversion is not strictly a commercially practicable proposition. Large subsidies, either in the form of tariffs or excise taxes on petroleum or gasoline from petroleum, are necessary to make such operations practicable from a commercial standpoint in such countries.

German Processes Described

From Dr. Arno C. Fieldner, chief of Fuels and Explosives in the Bureau of Mines, the following description of the two German hydrogenation processes is obtained:

"The direct process, usually termed the coal hydrogenation or the Bergius process, was patented by F. Bergius in 1914 and developed to a commercial stage by the inventor and the I. G. Farbenindustrie. Commercial production in Germany began in 1926 and steadily increased until at the present time it may be 4,000,000 or more metric tons (94,400 barrels per day) of gasoline per annum.

"In 1935, Imperial Chemical Industries at Billingham, England, completed a similar direct coal hydrogenation plant having a capacity of 150,000 long tons, (3,540 barrels per day) of gasoline per year.

"From a chemical point of view the coal hydrogenation process consists of forcing hydrogen in the complex coal molecules and removing oxygen so that its chemical constitution is changed to that of petroleum whereupon the coal substance liquefies and actually becomes petroleum.

"This reaction is accomplished by mixing a small amount—usually less than 1 per cent—of a catalytic material such as a compound of tin with approximately equal parts of finely powdered coal or lignite and heavy oil previously obtained from the process, and pumping this paste into a high-pressure steel vessel together with hydrogen gas at pressures of 3,000 to 8,000 pounds per square inch. The temperature of the reacting mass is maintained at 800 to 900° F.

"The oil product from the reaction vessel is separated from the solid residue of ash-forming material and unliquefiable carbonaceous matter and is distilled into light, middle, and heavy oil fractions. The light oil is refined directly to gasoline. The middle oil is hydrogenated further by pumping it in the vapor phase together with hydrogen at high pressure and high temperature through a second high-pressure vessel containing a fixed catalyst such as molybdenum or tungsten sulfide.

"The product obtained is gasoline of 70 to 75 octane rating. By addition of tetraethyl lead the octane number can be increased from 80 to 85. At increased cost and with sacrifice of the yield obtained it is possible to further increase the octane rating of the leaded gasoline to somewhat above 90."

As a side comment on the above statement, there may be the answer as to where Germany is getting aviation gas. It has not been so very long ago that American aircraft, military and others, were content, or at least using generally, gas in those octane numbers.

Dr. Fieldner cites other possibilities in this process. The Bureau of Mines has developed a modification for the production of a heavy bunker "C" oil by hydrogenation at lower pressures of about 1,000 pounds per square inch.

The indirect hydrogenation process known as the Fischer-Tropsch method, after the names of its inventors, is described by Dr. Fieldner as follows:

"Coal, lignite, or natural gas is first converted with the aid of steam to water-gas—a mixture of carbon monoxide and hydrogen. This mixture of gases in proper proportion and after suitable purification is then passed over a solid catalyst at pressures of 1 to 10 atmospheres, and temperatures ranging from 360 to 410° F. The products obtained are a low-octane gasoline, an excellent diesel oil, liquefiable gases and paraffin wax. One ton of these products is obtained from 4 to 4.5 tons of coke which in turn requires a carbonization of 5 to 6 tons of bituminous coal or about 0.70 tons of coal per barrel of motor fuel."

It will be noted that the discussion has strayed into use of other coals than lignite. It has been suggested by these references that by-products can be produced on a practical basis, using bituminous coal, and this includes plastics among others. By-products of coking plants—benzol, phenol, etc., go into plastics and protective coatings. A briquetting company in North Dakota operates a carbonization plant from which some tar acids are obtained, but fuel materials are the primary product.

Political Angle

However, proponents of greater use of lignite read into the developments at the Bureau of Mines, based on the German processes, proof that American lignite is a dependable source of valuable by-products. So far, government encouragement of new developments using other materials than lignite to produce such by-products for war use has led to loud criticism by lignite-state members of Congress, delays in the lignite program being attributed to indifference at the War Production Board and other war agencies.

Again, in considering what other countries may be doing, there are some quarters who point to the difference in cost between utilization of established raw materials and exploration or wide-scale use of newer processes or materials. This would apply to newer forms of fuel, in place of natural fuel products normally used in this country, and a host of other products. When a new process, not necessarily involving coal or lignite, proves more economical or simpler than those in common use, the bars go down. What the answer may be on lignite utilization at this stage, remains to be seen.

Ersatz Gasoline Costly, Requires Engine Changes

The National Bureau of Standards reported in a recent announcement that experiments indicated that alcohol and other substitutes for gasoline might find a limited use, at least in the Eastern gasoline shortage area. They will be a good deal more expensive than gasoline but, with engine adjustment, could be expected to give as good performance, it said.

The experiments were undertaken by the bureau at the request of the Board of Economic Warfare. What the board wanted was substitute fuels from vegetable products which could be produced in countries to which lend-lease gasoline now has to be shipped. However, now that a large part of the United States is suffering from gasoline shortage, the results of the tests seem likely to be of importance to Eastern car users.

"Gasoline substitutes, even if not subject to tax, will be several times as costly as gasoline and will yield fewer miles per gallon," said Dr. Lyman J. Briggs, director of the bureau. "With proposed readjustment of carburetor and ignition timing, power and performance should be as good as with gasoline. So far, tests have not disclosed any feature which would prohibit the use of these fuels in present engines although tests to determine wear have not been completed."

NEWS OF THE MONTH

GENERAL

U. S. To Auction 285 Alien Concerns

Total of 285 companies owned by German, Japanese or Italian nationals are to be sold by Alien Property Custodian at public auction. Some of them are of great importance and a rough estimate of the total value is $500,000,000, although in normal times their value might be put above that figure.

The Alien Property Custodian's office is consulting the Securities and Exchange Commission with regard to the manner in which competitive bidding should be carried on to meet standards laid down more than a year ago by the SEC with regard to the disposal of the surplus property of public utility holding companies.

Many of the German concerns to be dispersed are of great importance in the chemical and dyestuffs industry. It is therefore significant that among the conditions to be exacted in the disposal of the properties is that they should be sold only to bidders who will use them for competitive and not monopolistic purposes.

Another condition will be that the successful bidders will not only be able to operate the enterprise profitably but will be able to insure that for a sufficient term of years it shall not again fall into German, Japanese or Italian hands. In the case of the larger firms to be sold this will probably be accomplished by requiring bidders to set up a voting trust.

Where these conditions have been satisfied the properties will be sold to the highest bidder. Prominent among them are General Aniline Film Corporation, American Bosch Corporation, Buffalo Electric Chemical Corporation, the Shering Corporation and American Potash and Chemical. The most important are German. Next come the Japanese and third the Italian.

New Winthrop Research Dir.

Maurice L. Tainter, M.D., professor of pharmacology, Stanford Univ., has recently been named research director of Winthrop Chemical Co., Inc.

Biotin Synthesized

One of nature's most powerful, rarest and costliest vitamins, biotin or Vitamin H, has been synthesized at the research laboratories of Merck & Co. by Dr. Stanton A. Harris, Dr. Donald E. Wolf, Dr. Ralph Mozingo and Dr. Karl Folkers. Extracted largely from liver, the world's entire supply of biotin amounts to about one-tenth of an ounce. Only minute amounts measured in micrograms were available to research workers, who paid for it at the rate of $4,000,000 an ounce.

Results of assays on bacteria with the synthetic biotin "show that it has a biological activity equal to that of natural biotin," the report declares. "Comparison of synthetic with natural biotin establishes their identity and, of course, proves unequivocally the assigned structure of biotin," described last October by Prof. Vincent du Vigneaud and his collaborators at Cornell University Medical College and Merck Labs.

A. S. T. M. Holds Annual Session

To provide ample time for presentation of some 100 technical papers and reports scheduled for the forty-sixth annual meeting of the American Society for Testing Materials in Pittsburgh (June 28—July 2, Hotel William Penn), 15 technical sessions are planned. Outstanding groups of technical papers will cover soils, with a Symposium on Soil Test Method; water —papers on dissolved oxygen and a Symposium on Identification of Water-Formed Deposits, Scales and Corrosion Products by Physicochemical Methods; and a Symposium on Significance of Hardness Testing. Other outstanding sessions at the meeting will cover petroleum products and asphalt; corrosion; electrodeposited coating; non-ferrous metals; rubber and plastics; effect of temperature and fatigue; cementitious materials and concrete.

Chemists Search for Fats

Formation of a committee of Chicago chemists and scientists who hope to uncover new sources of industrial fats and greases to salvage for war needs has been announced by War Production Board officials. Working with WPB and the Chicago section of American Chemical Society, the committee will promote improved and new methods of fat collecting among industries such as dairies, meat packing and margarine processing.

National goal for 1943 has been set at 500,000,000 pounds and the country's 40,000 chemists are being asked to help in the drive which is headquartered in Chicago. While all present sources will be scanned for possible improvement, the national goal can be achieved only if fats and oils sources are found in hitherto unknown industries, WPB said.

Named Agric. Research Dir., American Cyanamid Co.

M. V. Bailey has been appointed director, Agricultural Research, by the Fertilizer Division of American Cyanamid Co. He will direct field research in fertilizers and will make his headquarters at Rockefeller Plaza, N. Y.

Striking Rubber Employees Tie Up Production

Approximately 52,000 employees of the General Tire and Rubber Co., B. F. Goodrich Co., Goodyear Tire and Rubber Co. and the Firestone Tire and Rubber Co. in Akron, Ohio, went on strike for about five days. William H. Davis, War Labor Board chairman, said that while the strike continued the board would take no action on a petition of the United Rubber Workers for reconsideration of a wage decision. The WLB had denied a panel's recommendation for 8 cents an hour wage increase for Akron rubber workers because granting it would have, according to the board "seriously unstabilized wage relationships in the industry."

Union officials, too, continued to insist that the strike was unauthorized. Strikers, they held, were using union halls to keep the walkout in progress.

Meanwhile strikes in plants of Spicer Mfg. Co., Electric Auto-Lite Corp., Alleg-

heny-Ludlum Steel Corp., American Steel and Wire Co., Timken Roller Bearing Co., and Marlin Rockwell Corp. continued to hold up vital war production.

Committee on Chemical Problems

Advisory committee on chemical matters has been appointed for the Detroit area by Dr. Harvey N. Davis, Director of the Office of Production, Research and Development, W.P.B. This committee will act in an unpaid advisory capacity to firms doing war work who have chemical problems which are puzzling them. The committee will not do any experimental work but will discuss problems with manufacturers and try to make helpful suggestions.

Personnel of the committee includes:

Dr. George Calingaert, director, Chemical Research, Ethyl Corp.; Dr. Arthur H. Carr, dean, College of Engineering of Wayne University, Detroit; Dr. Clyde C. DeWitt, chairman, Department of Chemical Engineering, Michigan State College; Ralph D. Hummel, assistant manager, Chemical Department, Parke, Davis, and Co., Detroit; Dr. Harvey Merker, superintendent of manufacturing, Parke, Davis and Co., Detroit; Mark E. Putnam, vice president, director, and production manager, Dow Chemical Co., Midland, Mich.; Major W. P. Putnam, president, Detroit Testing Lab.; Dr. Alfred H. White (chairman of committee), professor, Chemical Engineering Dept., University of Michigan.

Cartel Restriction Disapproved

Stockholders of Standard Oil Co. of N. J. refused to approve a minority resolution prohibiting the company from resuming cartel relations with I. G. Farbenindustrie after the war. According to the minority statement, failure to pass such a resolution would "return control of the synthetic rubber industry to I. G. Farben." R. W. Gallagher, president of Standard Oil, declared that Standard Oil never had any cartel agreement with the German dye trust.

Also contested by the minority group was a management resolution approving the gift of Standard Oil's Buna S patent rights to a government controlled pool. The question was raised whether Standard Oil held these rights or whether they had been seized by the Alien Property Custodian as belonging in part to I. G. Farbenindustrie. Mr. Gallagher, in support of the Buna S resolution, commented that "we do not want to put into the hands of government—no matter how beneficient that government may be—perpetual control over the development of any industry."

Critical Chemicals

National Registry of Rare Chemicals, Armour Research Foundation, 35 W. 33rd Street, Chicago, Ill., requests information concerning the following chemicals which are urgently needed by war industries:

1. Thionalide (thioglycolic b-aminonaphthalide)
2. Di-N-Hexyl-Amine
3. alpha-Naphthoic Acid also beta
4. alpha-keto-glutaric Acid
5. 4-Oxypyrimidine also 6- and 4,6-Oxypyrimidine
6. Purine
7. o-Bromobenzaldehyde
8. Acetyl Sulfanilic Chloride
9. Lithium Lactate
10. Desoxy Ribose
11. Di-N-Propyl Aminoethyl alcohol

Technical Training Cut

First major curtailment of civilian training in the engineering schools of the country is announced by Cooper Union. Effective June 14, only freshman engineering courses will be offered in the day school of new civilian students, who will be admitted in limited numbers.

"Almost universal" drafting of students is foreseen by Cooper Union authorities, Dean George F. Bateman said. "Despite the Selective Service directive to draft boards recommending the deferment of engineering students who will graduate on or before July 1, 1945, public opinion may force the selection of able-bodied students in all fields before taking married men with children," he pointed out. "Digging down into the 3A and 3B class as foretold by Major General Lewis B. Hershey, Director of Selective Service, will probably mean that many students must go.

"The night school will continue to function as usual, since it is now serving the war effort through the majority of war workers enrolled. We will keep the night school running at capacity as long as possible."

Open Synthetic Rubber Labs.

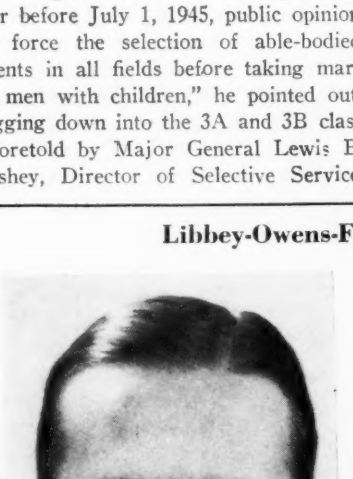
Research laboratories devoted to the continuing study of synthetic rubber have been established in McGilvery Hall, Kent State University, Kent, O. by The B. F. Goodrich Co. The laboratories and the staff engaged in the activity will be under the direction of Dr. Charles F. Fryling.

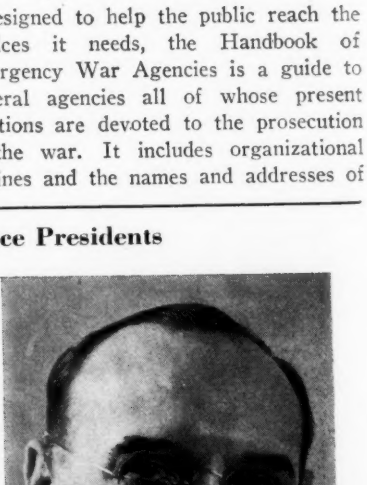
Scientists assigned to the university laboratories will concentrate their efforts on the government's synthetic rubber program which this year is expected to produce approximately 250,000 tons of man-made rubber of all types. The work under way at Kent State University is planned for only the duration of the war. However, it is evidence of the closer cooperation which is developing between industry and educational institutions. Such cooperation at Cornell University has resulted in a long-range program with B. F. Goodrich for the study of rubber-bearing plants which can be grown in North America.

War Agencies Handbook Issued

Designed to help the public reach the services it needs, the Handbook of Emergency War Agencies is a guide to Federal agencies all of whose present functions are devoted to the prosecution of the war. It includes organizational outlines and the names and addresses of

Libbey-Owens-Ford Vice Presidents





James L. Rodgers Jr., president of Plaskon Co., Inc., and L. G. Bryon, in charge of production for Libbey-Owens-Ford Glass Co. were elected vice presidents of the latter concern at its annual meeting on April 15, in Toledo, Ohio.

officials of emergency war agencies, the War and Navy Departments, and the United States Maritime Commission.

Copies may be obtained from Superintendent of Documents, Government Printing Office, Washington, D. C.

Magnesium Too Plentiful

More magnesium than the arms program needs now flows from American plants.

So the government has cut the production at the sea-water factories by 25%. The largest of these, run by Dow Chemical Co., was turning out one-fourth more than its estimated capacity. However, a cutback has not been ordered on the new plants which make magnesium from ores (rather than from sea water).

Although there is plenty of magnesium now, the expanding bomber production may later take up the slack.

A.S.T.M. Standards of Plastics

First edition of this new A.S.T.M. publication contains 71 specifications, methods of tests, and definitions as developed by Committees D-20 on Plastics and D-9 on Electrical Insulating Materials. It gives in a single publication material considered of importance to those concerned with plastics.

Specifications: Covered by standardized specifications are the following materials: several kinds of molding compounds—phenolic, polystyrene, melamine-formaldehyde, urea-formaldehyde, cellulose acetate, cellulose acetate butyrate:—also sheets, rods, etc., of cellulose nitrate, and cast methacrylate; also, vinyl chloride-acetate resin sheets; phenolic laminated sheet and phenolic laminated tubing for radio applications.

Tests: The large number of standard tests procedures essential in determining various properties of plastics cover such matters as the following: arc resistance, resistance to chemical reagents, colorfastness, compressive strength, relative humidity, deformation, distortion, dielectric constant, diffusion of light, flammability, flexural strength, flow temperatures, haze, impact resistance, mar resistance, punching quality, refractive index, surface irregularities, shrinkage, softening point, tensile properties, tear resistance, thermal conductivities, water absorption, etc.

Copies can be obtained from American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa.

Named to War Plants Corp.

Phillip B. Hofmann, president of Ortho Products, Inc. of Linden, N. J. has been granted a temporary leave of absence to serve as deputy director of the Field Service of Smaller War Plants Corporation in Washington. Mr. Hofmann will assist in organizing and servicing the regional and district offices.

YES SIR!
Bemis WATERPROOF Bags deliver full weight

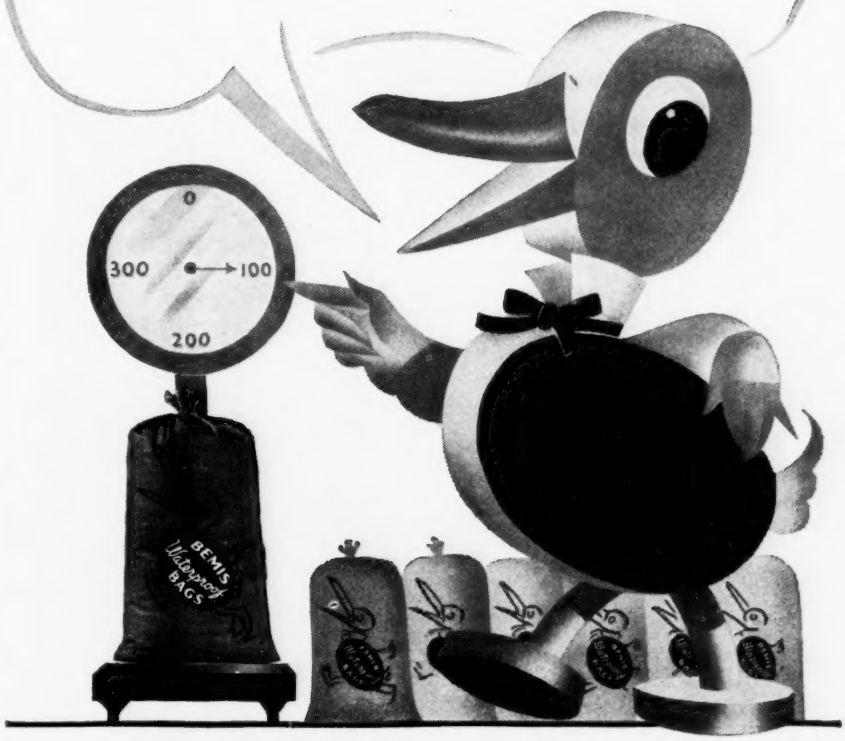
You can say "goodbye" to weight loss and shrinkage in storage or transit, if you pack in Bemis Waterproof Bags. For these sturdy laminated bags are constructed to prevent losses either by evaporation or sifting. And they are made *extra strong* to stand the strain of shipping in these days when trucks and cars are loaded to capacity.

Tough, closely woven fabric forms the outside of Bemis Waterproof Bags. This fabric is *bonded,* by special adhesives, to layers of paper in any combination *your* individual problem requires.

For example, Bemis Waterproof Bags can be made that keep moisture in and dampness out . . . retain desirable aromas and repel objectionable odors . . . keep out dust and dirt . . . resist greases and acids.

Our engineering department will work with you in developing bags tailor-made to your needs. Details and samples sent promptly on request.

WATERPROOF DEPARTMENT
BEMIS BRO. BAG CO.
St. Louis • Brooklyn
BETTER BAGS FOR 85 YEARS



COMPANIES

Plexiglas Plant Opened

Opening of a new plastics plant which will quadruple the production of Plexiglas sheets for bomber noses, gun turrets, astro domes, and other transparent plane enclosures was announced by Rohm & Haas Co. It lifts today's transparent plastic output to a volume more than 40 times greater than the volume at the outbreak of World War II.

Located in Knoxville, Tennessee, inland from both coasts and borders, with an ample available local labor supply, the plant ingeniously utilized mostly secondhand equipment when new, tailor-made furnishings could not be found immediately, even with top priorities.

Dow Changes Plastics Divs.

Dow Chemical Co. announces the reorganization of its Plastic Sales Division and the formation of a Plastics Development and Service Division. D. L. Gibb, who has been affiliated with the company for the past twenty years, has been made manager of the former.

The newly formed Plastics Development and Service Division, in charge of W. C. Goggin, will handle both the development of new plastics and the service on standard plastic products in new fields.

Mann Adopts New Name

F. J. Mann, Inc., manufacturing chemists formerly at Long Island City, have changed the name of the concern to Mann Fine Chemicals, Inc. and have moved to larger quarters at 50-49th Street, Woodside, L. I., N. Y.

More Lucite for Planes

Another plant for the manufacture of "Lucite", methyl methacrylate resin, for noses, gun turrets and other transparent sections of military airplanes has started production at Leominister, Mass., reported the Plastics Dept. of du Pont de Nemours & Co. The entire production is for the government, which will allot it to the aircraft and other war industries.

Chemical Co. Buys Factory

Keiner Chemical Co. has purchased a three-acre plant in Newark, N. J.

Magnesium Plant Dedicated

Dow Magnesium Corp.'s new magnesium plant in Ludington, Mich., was dedicated formally June 15. Feature of the ceremonies was shipment of the first carload of magnesium chloride from the plant to a second new Dow magnesium plant at Marysville.

Consol. Oil New Sinclair Oil

Stockholders at the annual meeting of Consolidated Oil Corp. approved a proposal to change the name of the company to Sinclair Oil Corp. It was recalled at the meeting that the name of the wholly owned subsidiary that made virtually all the sales of petroleum products in this country was the Sinclair Refining Co., and that many of the subsidiaries of the company contained the word Sinclair.

Kessler Chemical Relocates

Kessler Chemical Co., Inc. has announced the removal of its offices and plant to State Road and Cottman Ave., Phila., Pa.

Butadiene Plant Opens

Standard Oil Co. of New Jersey announced May 25 that its subsidiary, Standard Oil Co. of Louisiana, had put into full operation at Baton Rouge, La., its fifth plant for the making of butadiene, chief ingredient used in the manufacture of synthetic rubber.

Of the five plants, the company said that two were entirely financed by it and that two others were built or equipped cooperatively by it and the government. Another is owned by the Defense Plant Corporation. All told, the company said that it had invested $12,050,600 in these plants and the government $11,507,000.

Army-Navy "E" Awards

Alloy Steel Products Co., Inc., Linden, N. J.

E. I. du Pont de Nemours & Co., Belin Works, Moosic, Pa.

E. I. du Pont de Nemours & Co., Perth Amboy plant, Perth Amboy, N. J.

Hooker Electrochemical Co., Niagara Falls, N. Y.—White Star added to Army-Navy "E" flag.

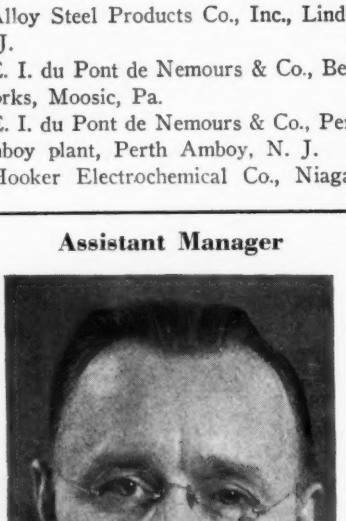
I. F. Laucks, Inc., Seattle, Wash.

Pennsylvania Salt Mfg. Co. of Washington.

Reichhold Chemicals, Inc. Detroit, Mich., and Elizabeth, N. J. plants, have received the second White Star to be added to their flags.

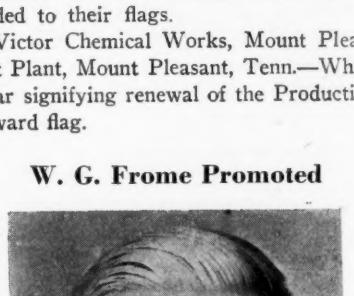
Victor Chemical Works, Mount Pleasant Plant, Mount Pleasant, Tenn.—White Star signifying renewal of the Production Award flag.

Assistant Manager



Appointed assistant manager of General Foods Central Labs., Dr. A. G. Olsen will also continue as director of the food technology section.

W. G. Frome Promoted



Weston G. Frome, who has been general manager of the Atlas Powder Co.'s division at San Francisco, Cal., recently has been appointed assistant general manager, Explosives Dept.

ASSOCIATIONS

Oil Chemists Elect

Lamar Kishlar of Ralston Purina Co., St. Louis, was elected president of the American Oil Chemists' Society at its thirty-fourth annual meeting in New Orleans, May 13-14. Other officers include:

First vice-president, K. S. Markley, Southern Regional Research Lab., New Orleans; second vice-president, Samuel O. Sorenson, Minneapolis, Minn.; third vice-president, J. H. Kirby, Memphis, Tenn.; re-elected fourth vice-president, Foster D. Snell, Brooklyn; re-elected secretary-treasurer, J. C. P. Helm, New Orleans.

A.C.S. Undertakes Gas Defense

Chemical and other industries of Chicago, through the Chicago section of the American Chemical Society, are contributing the money to finance, as well as the technical man power to staff, a gas defense organization in cooperation with the Office of Civilian Defense.

The Chicago section began to collabor-

ate with the Office of Civilian Defense more than a year ago, when the section was invited to undertake the organization of the gas defense phase of Mayor Kelly's civilian defense program. Professor Ward V. Evans, chairman of the department of chemistry at Northwestern University, was appointed by the mayor as chief gas officer. He at once undertook the training of chemists in the technique of gas defense, which requires specialized chemical knowledge.

More than 500 graduates of this course in turn undertook the instruction of classes of air raid wardens. Some of them gave as many as 60 lectures to these classes.

Industrial Research Inst. Meets

Completing five years of activity, the Industrial Research Institute held its annual meeting in N. Y. May 21-22.

Dr. G. S. Whitby, professor of rubber chemistry, University of Akron, and recently director, Chemical Research Lab., Department of Scientific and Industrial Research, Teddington, England presented the British research picture and Dr. Robert W. King, assistant vice-president, American Telephone & Telegraph Co., discussed the situation in this country.

Canadian Chemists Convene

Canada's post-war policy and commercial relations with other countries were discussed at the joint 26th annual meeting of the Canadian Chemical Assoc., Canadian Institute of Chemistry and Society of Chemical Industry held May 31-June 1 at Montreal.

During the general session of Canadian Chemical Assoc., J. R. Donald of Department of Munitions and Supply spoke on "A Review of the Chemical and Explosives Program in Canada," while Dr. John S. Bates discussed "The future of Canadian Chemical Organizations."

Technical sessions on the second day of the convention dealt with practical problems met in the laboratories and Canada's research departments.

CALENDAR OF EVENTS

AMERICAN PHARMACEUTIAL MANUFACTURERS' ASSOCIATION, Annual Meeting, The Homestead, Hot Springs, Va. June 14-17.

AMERICAN SOCIETY FOR TESTING MATERIALS, Annual Meeting, Pittsburgh, Pa. June 28-July 2.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Semi-Annual Meeting, Hotel Biltmore, Los Angeles, Calif. June 14-16.

NATIONAL FERTILIZER ASSOCIATION, Annual Convention, Hot Springs, Va. June 21-23.

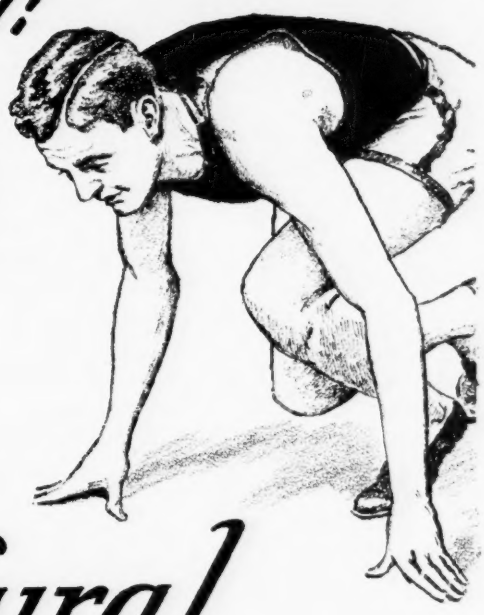
SALESMEN'S ASSOCIATION OF THE AMERICAN CHEMICAL INDUSTRY, Bonnie Briar Country Club, Larchmont, N. Y. July 15.

SALESMEN'S ASSOCIATION OF THE AMERICAN CHEMICAL INDUSTRY, Forest Hills Field Club, Bloomfield, N. J. Aug. 12.

RESEARCH PAYS

Start Now!

Furfural is under allocation, but the day appears to be not so distant when the product will become freely available again. Prepare now for a running start when that day arrives!



Furfural

This product is needed for synthetic rubber production, so allocation order M-224 has been in effect since October 1, 1942. New facilities are building and present facilities are expanding. TODAY'S requirements foretell TOMORROW'S surplus.

The Furans

FURFURAL

FURFURYL ALCOHOL

TETRAHYDROFURFURYL ALCOHOL

HYDROFURAMIDE

Prepare now for that head start on your competitors by examining Furfural. Here are typical properties:

Specific Gravity	1.161 (20/20°C)
Boiling Point	157-167°C
Freezing Point	—37°C
Flash Point (open cup method)	56°C
Color	Straw yellow to amber

Write for this Free Booklet

You will do well to examine Furfural. Write today for a sample and technical information to help you use it in your application. Inquiries about Furfuryl Alcohol, Tetrahydrofurfuryl Alcohol and Hydrofuramide are also invited.

The Quaker Oats Company

TECHNICAL DIVISION 3-6 CHICAGO, ILLINOIS

FURFURAL - FURFURYL ALCOHOL - HYDROFURAMIDE
... TETRAHYDROFURFURYL ALCOHOL ...

More Oil and Seed Imported

Additional imports of linseed oil and flaxseed from the Argentine are expected during July, August and September, and the War Food Administration is requesting the linseed crushers' industry to provide information for a fair allocation of the supply.

The crushers' industry food advisory committee of the Food Distribution Administration, meeting recently in Washington, discussed plans for receiving the expected imports—about 75,000 tons of flaxseed and 40,000 tons of oil and reviewed with WFA provisions of proposed food orders affecting the industry.

Revamp Dye Machinery

Further conversion of equipment to meet new military requirements of the Quartermaster's Corp and Chemical Warfare Service is being planned by the dyestuff industry, it was revealed June 3 at the meeting of the members of the Dyestuff Manufacturer's Industry Advisory Committee and government officials.

The recent adoption of dark olive drab for Army uniforms and the Navy's new battleship grey present production problems to the industry necessitating this proposed stepping up of the conversion program, it was stated. The plan, which is a voluntary one, is already in process in part of the industry.

PERSONNEL

Penn Salt Promotes

William P. Drake, recently appointed manager of sales, Pennsylvania Salt Mfg. Co., has been placed in charge of the company's sales of acid and alkali-resistant cements and chlorinated organic chemicals, in addition to his former duties as manager of the Pennsalt Cleaner Division.

Albert H. Clem and Joseph J. Duffy, chemical engineers formerly in the Detroit and Rochester territories were brought to Philadelphia to assist Mr. Drake in the Pennsalt Cleaner Division.

Heinz Vice-President

H. N. Riley, head of H. J. Heinz Co.'s Research and Quality Control Dept. and director of their fellowship activities at Mellon Institute, has been elected a vice president of the concern.

Fred Prince, for the past three years manager of Penn Salt's Laundry and Dry Cleaning Division, has been appointed manager of sales. He will be in charge of sales of hydrofluoric acid and anhydrous hydrogen fluoride, and will retain jurisdiction over the Laundry and Dry Cleaning Division.

Charles M. Fehr, formerly chief chemist at the Easton plant, has been transferred to Philadelphia to assist Mr. Prince in the sale and servicing of anhydrous hydrogen fluoride to the oil industry.

Other Personnel

Harry A. Campbell has been appointed chief inspector of the Bureau of Explosives.

Harold E. Hall has been elected president of Metals Disintegrating Company, Inc., of Elizabeth, N. J.

Arthur H. Sanford, former salesman in the Wilmington, Del., branch office area of Hercules Powder Co., has been appointed manager of naval stores sales for the company at their Boston office.

S. Carle Cooling was elected vice-president in charge of Packers Cans Sales, at the annual meeting of the Crown Can Company.

First Woman Recipient of Chemical Fellowship

Awarded the Baker Midwestern Research Fellowship, Margaret E. Griffing of Lexington, Ky. will work under Dr. Mellon at Purdue Univ. on a problem involving adsorption on precipitates obtained by organic reagents.

Petrus W. Meyeringh, vice-president of Hercules Powder Co., has been appointed district chairman for Delaware of the Committee for Economic Development.

Frank J. Crowley and **David L. Cable** have been elected vice-presidents of W. B. Lawson, Inc. (subsidiary of Ferro Enamel Corp.).

Louis C. Beale, recent graduate in chemical engineering from Ohio State University, has been appointed to the research staff of Battelle Memorial Institute, Columbus, Ohio, and assigned to its division of non-ferrous metallurgy.

Going Strong with the PROTECTIVE COATING INDUSTRY

CONJULIN* — Drying Oils — **CONJUSOY***

Tung Oil and Dehydrated Castor Oil Replacements

for

- Insulation Varnishes
- Wrinkle Finishes
- Baked Coatings
- General Paint and Varnish Use

WOBURN

DEGREASING CO. OF N. J. Harrison, N. J.

as

FATTY ACIDS with conjugated Double Bond Molecular structure for Exceptionally Fast Cooking Alkyd Resins.

* Trade Mark. Pat. Applied For

ABC

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FORMALDEHYDE

Manufactured by
Our Associated Company

KAY FRIES CHEMICALS, INC.
West Haverstraw, New York

TANK CARS - BARRELS - DRUMS

AMERICAN-BRITISH CHEMICAL SUPPLIES, Inc
180 MADISON AVE., NEW YORK, N.Y.

Church & Dwight Co., Inc.

Established 1846

70 PINE STREET NEW YORK

Bicarbonate of Soda

Sal Soda

Monohydrate of Soda

Standard Quality

OBITUARIES

Edwin M. Baker

Professor Edwin M. Baker, member of the Univ. of Mich. Chemical Engineering Dept. faculty since 1918 died May 26 in New York. His age was 50.

Gustave Bayer

Gustave Bayer, formerly manager, New York Branch of Merck & Co., Inc., died suddenly at Bronxville, New York, on May 17. He was born on June 3, 1876.

William H. Billings

William H. Billings, 69, executive of Union Carbide and Carbon Corp., with which he had been associated since 1917, died May 11 in Charleston, W. Va., at the home of his son.

Hamilton P. Cady

Dr. Hamilton Perkins Cady, University of Kansas chemist who developed helium in natural gas in Kansas, died in Lawrence, Kan., May 26. His age was 68. Dr. Cady, a member of the university's staff for forty-four years, found helium in natural gas produced at Dexter, Kan., in 1907.

Francis J. McDonough

Francis Joseph McDonough, president of New York Quinine and Chemical Works, Brooklyn, and president of Drug and Chemical Club of New York, died May 31 at his home, from the effects of a heart attack. He was 54 years old.

Born in Brooklyn, Mr. McDonough, at the age of 12 began as an errand boy for McKesson & Robbins, and was made vice president of the firm in 1918, retaining the position until 1925.

In the latter year Mr. McDonough was elected president of the New York Quinine and Chemical Works. He was chairman of the Drug, Chemical and Allied Trades section of the New York Board of Trade in 1933, and at his death represented the section on the parent board of directors.

Walter R. Phemister

Walter R. Phemister, for more than twenty-six years treasurer of Monsanto Chemical Co., died May 22 in his home at the age of 69.

Chemurgy and the War—Correction

Robert S. Aries, author of this article in our February issue, wishes to make the following corrections:

The second column of Table 2 should read "lb. butadiene per ton corn" instead of "lbs. glycol per ton corn". All the costs in Tables 3 and 4 should be read in cents and not in dollars.

The statement to the effect that lignin vanillin has driven the synthetic product off the market is incorrect. A report by a large manufacturer of synthetic vanillin and ethyl vanillin shows a 17% gain in volume of flavoring units for the first quarter of this year over the corresponding period of 1942.

MAKE *Cowles* YOUR SOURCE OF SILICATES

Drymet REG. U. S. PAT. OFF. **ANHYDROUS SODIUM METASILICATE.** Cowles DRYMET is the most highly concentrated, most economical form of sodium metasilicate available. DRYMET contains no water. Yields nearly twice the chemical strength of hydrated sodium metasilicate at a substantial saving. Completely soluble, non-caking, easy to handle.

Crystamet REG. U. S. PAT. OFF. **PENTAHYDRATE SODIUM METASILICATE.** Cowles CRYSTAMET is an exceptionally pure, perfectly white granular sodium metasilicate with the normal 42% water of crystallization. Excellent solubility, uniformity, chemical stability.

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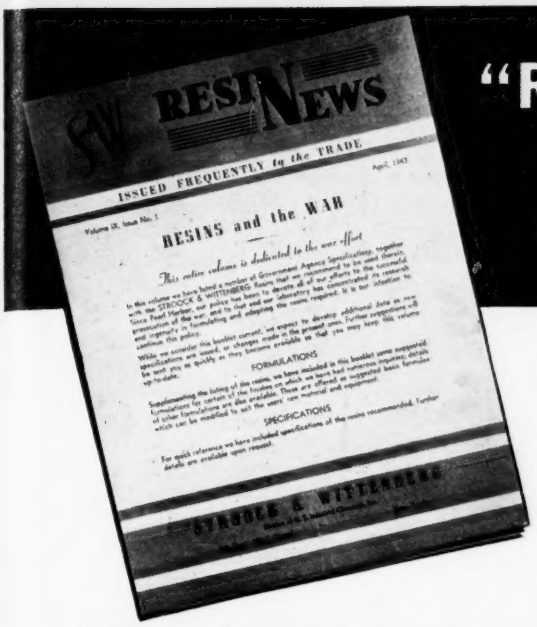

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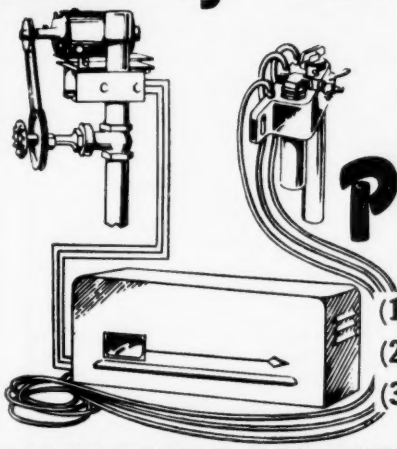
Density Controller for PULPS



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Massco - Adams AUTOMATIC Density Controller, first used in ore classification, now has many applications in non-metallic and chemical plants — including potash, phosphate plants, washing coal, etc. Maintains **visual** control by motor - operated regulation of dilutant supply valve. Available with standard chart recorder or with arm and weights for SINK AND FLOAT process. Widely optional location. In writing please state your problem. **Send for Descriptive Folder.**

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Boiling range	**79-82°C.**
Steam distills at	**76°C. (16% water)**
Specific gravity	**.782-.785 @ 20°C.**

Miscible with water, ethyl alcohol, ethyl acetate, carbon tetrachloride, acetone and ether, and dissolves most gums.

Insoluble in most hydrocarbons, such as the paraffin series.

Used for synthesis of Anti-Malarials, Vitamin B_1 and pyrimidines, as an extracting agent to remove impurities from oils, and for separating fatty acids and various organic impurities from waxes.

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Sees Rubber Use Doubled

World consumption of natural and synthetic rubber after the war may reach a total of 2,000,000 tons a year, nearly twice as much as ever consumed even in the biggest years up to now, according to John L. Collyer, president of B. F. Goodrich Co.

A clue to the progress being made, as reflected in price, he said, was seen in the fact that while his estimate three years ago before a Senate committee that synthetic rubber could be produced on a large scale in this country for as low as 25 cents a pound was received with general skepticism, the office of Rubber Director Jeffers recently has been reported as mentioning the likelihood of synthetic rubber at 16 cents a pound. But it will take a lower cost than this to eliminate natural rubber on economic grounds, Collyer declared.

Discussing the "really long-term prospect," Collyer said the ability of "the kind of post-war world that all of us hope for" to absorb easily twice as much rubber as it ever did in the past is apparent when attention is called to the fact that the pre-war per capita consumption of rubber was but three one hundredths of a pound in China and three tenths of a pound in Russia, compared to 10 pounds per person in this country. "You can see what a closing of those gaps—even slightly—would mean," he said.

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Washington

(Continued from page 676)

tend beyond the war period. This amendment was rejected by the House.

Perhaps one answer, on rubber supply as well as other chemical materials, may be found in anticipated post-war displacements. Pre-war natural rubber sources may be out of the market indefinitely. In the case of many chemicals, Germany was formerly a major source of supply for many markets. The current policies of the Alien Property Custodian, relative to handling German chemical patents in his control, strongly suggest that German chemical industries may not be the post-war factor they formerly were. Presumably the United States, as well as others of the United Nations, may benefit from a re-distribution of markets after the war in this connection.

Reserves

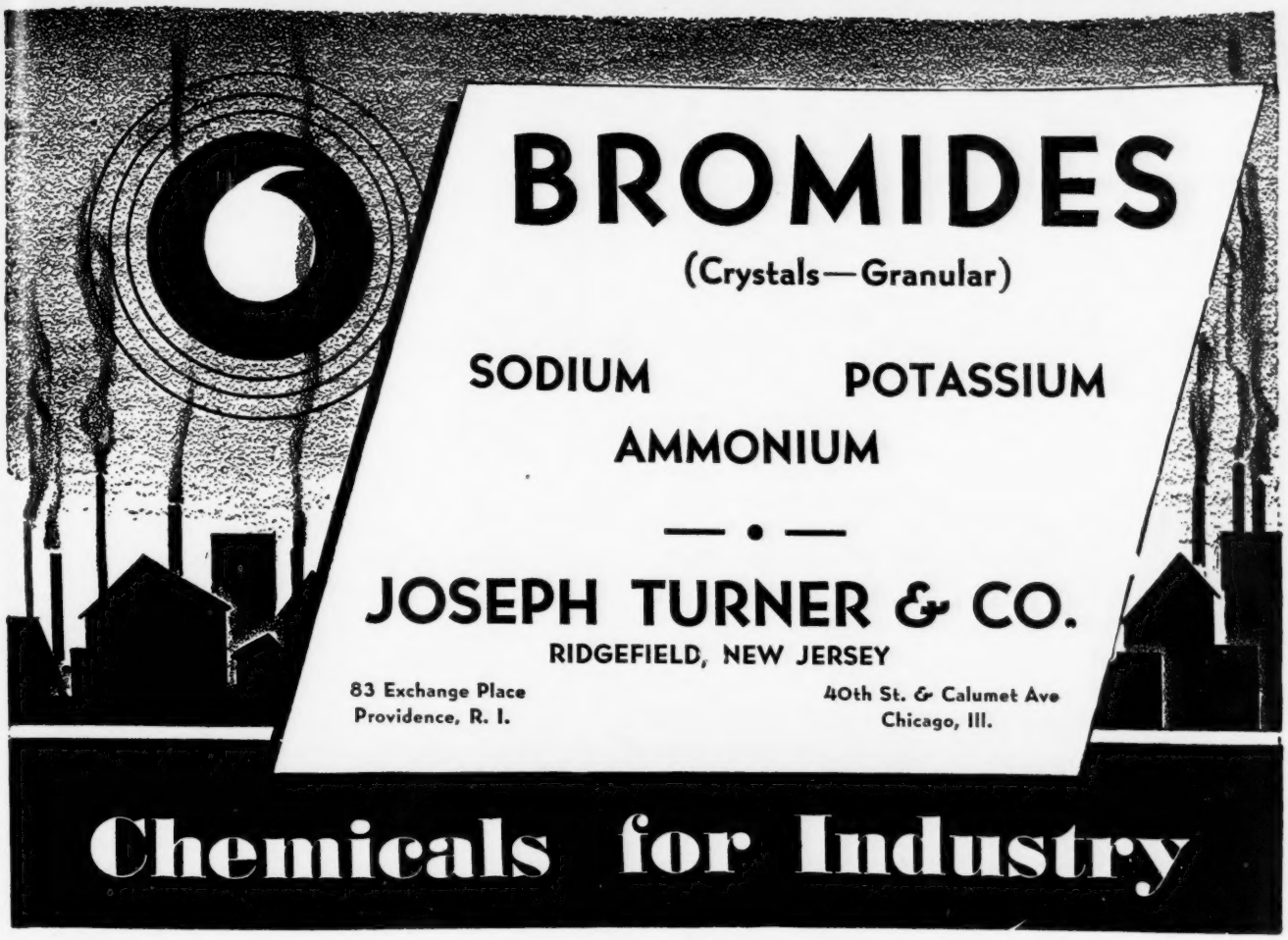
One of the more promising trends at the moment, with regard to the post-war situation, whatever it may turn out to be, is a disposition in Congress to give serious consideration in the next big revenue bill to post-war reserves for industry. Recent tax measures have apparently largely ignored the necessity of some such back-log for plants as they emerge into normal business again.

WPB's companion agency, the Office of Price Administration is rapidly reaching a crisis in its existence. Before this can appear it may be reorganized and may be operating under a new title. A current proposal gaining favor is to distribute some of OPA's more vital functions among older agencies.

This organization may survive the present pressure, but more trouble is looming for it. A new "bed-rock economy" report has been in the making for some time, and may be ready shortly. If it follows anticipated lines there will be renewed demands for a different administration of civilian supply problems. This realization may soften it considerably before it is issued.

Chemical supply continues to flow in larger proportion to war use. Distribution for May showed allocations in dollar value of $88,000,000 out of requests totaling $100,000,000. Of the allocations, 54 per cent in dollar value entered identifiable direct military use, compared with 42 per cent in March.

Of general interest to the industry, the recent coal strike has so threatened the fuel supply for power production in the coming months that a nation-wide curb on power utilization in non-essential lights may be necessary. This curb will be confined to commercial store lighting and some home use, but may cover unnecessary industry use also.



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*REG. U.S. PAT OFF.

- NEVOLL*, a coal-tar softener, is finding considerable use as a softener and plasticizer for the new GR-S (Buna S) synthetic rubber.
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INDUSTRIAL TRENDS

Steel: Obscured by the return of the coal miners to work is the fact that the five-day strike at the nation's coal mines has already caused irretrievable loss of war production at some of the country's steel plants.

Before the strike started coal supplies were exceptionally low at some of the plants and in the week of May 30 a shortage of fuel forced a number of blast furnaces here out of production. This cut-back caused a drop in steel output in the Greater Pittsburgh district. Production will also be affected to some extent this week by the coal strike.

A combination of furnace repairs and the effects of the coal strike reduced the steel output throughout the country for May 30 2½ points to 96½ per cent of rated capacity. Raw steel production in week of June 6 will probably not be much greater and actual estimates are uncertain until the full immediate effect of the coal stoppage has been determined. Furnace repairs also are expected to play a continued part in preventing the industry reaching higher ingot output levels.

Commodities: Bureau of Labor Statistics' index of prices of commodities in primary markets rose 0.3% in April to a new wartime high. Further increases in prices for fresh fruits and vegetables were largely responsible for the advance. The all-commodity index for April stands at 103.7% of the 1926 level, the highest point reached in more than 17 years.

During the 12-month period from April 1942 to April 1943, prices for farm products rose more than 18% and they are 103% higher than in August 1939. Food prices are nearly 10% over their April 1942 level; fuel and lighting materials and chemicals and allied products have risen from 3 to nearly 4%.

Business Barometers: Bank clearings declined from $3,594,100,000 to $3,140,828,000, but were still about 13% above a year ago.

Wholesale prices edged up slightly during the week of June 4. Daily wholesale price index of 30 basic commodities advanced from 171.71 to 171.9. Index for wholesale food prices of $4.1 remained at last week's levels, slightly below the wartime peak reached Ma 18, 1943. The upward trend of stock prices of recent weeks carried the Dow-Jones industrial stock average to a new wartime high of 142.75, as against the closing average of 140.82 of the preceding week.

Other: Production of fats and oils is reported to be 500,000 tons a year above 1941-1942. This was lower than expected by 500,000 tons. Orders in the glass container industry are estimated 20% higher than output. Production in the fertilizer industries has continued at peak levels.

Company	*Period*	**Taxes** *1943-1942*	**Net Profit** *1943-1942*
Vick Chemical	9 months ending March	$3,543,316-$1,385,976	$2,312,898-$2,458,752
United Carbon	March quarter	$393,000-$345,000	$507,139-$522,111
Interchemical Corp.	March quarter	.....	$240,977-$260,505
Liquid Carbonic Corp.	March quarter	$188,404-$184,680	$125,603-$175,495
	Six months	$264,862-$260,000	$184,452-$301,028
American Cyanamid	March quarter	$5,245,846-$3,823,473	$1,628,376-$1,299,900

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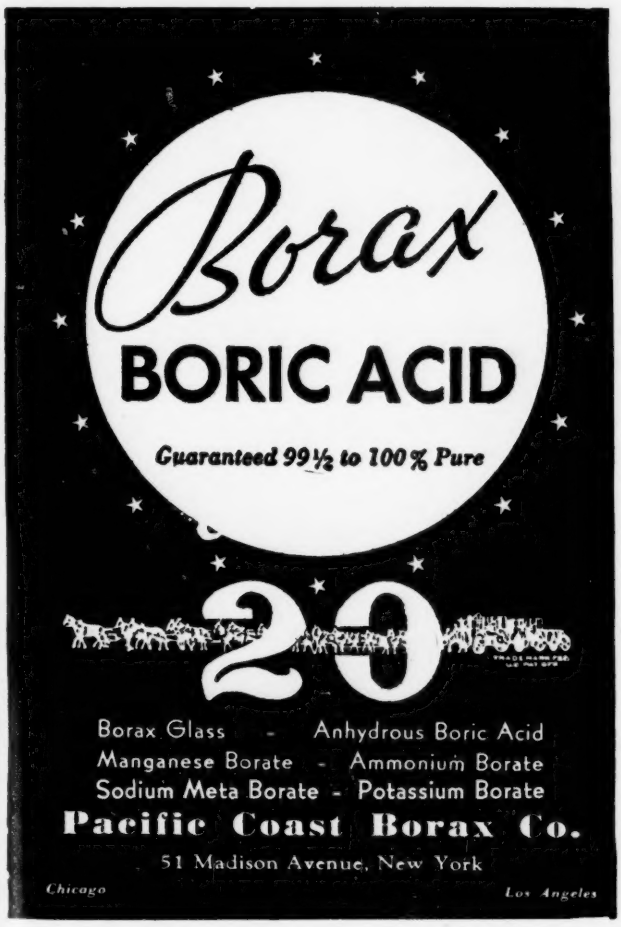

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CHEMICAL SPECIALTY COMPANY NEWS

Extract Manufacturers Meet

Synthetic flavors developed to meet wartime shortages of the natural products have proved so satisfactory that they are likely to be continued in use permanently, it was brought out at the thirty-fourth annual meeting of the Flavoring Extract Manufacturers Association in N. Y., May 24-25.

Eugene F. Bertrand of the Owens-Illinois Glass Co., Toledo, Ohio, who discussed the glass situation as it affects the flavoring extract industry, pointed out that because the trade was classified in the pharmaceutical and proprietary container group, it had escaped much of the regulations restricting food container sizes. Although the industry has thus been comparatively fortunate, in view of the wartime needs, it is imperative that the operators attempt individual economies at once, he said.

"Apparently there are not many, if any, large stocks of empty glass containers in the country today," Mr. Bertrand declared. "We do not know whether or not further limitation orders might be necessary for seasonable food packs, but we hope you will find it advisable to eliminate small sizes and other than standard shapes wherever possible. It is only through such contributions that are desired and felt necessary by the Washington people that we can hope to avoid orders of standardization or limitation that we might not be too happy with."

Reviewing the alcohol tax situation, George H. Burnett of Joseph Burnett & Co., Boston spoke of the Tydings Amendment which reduced the tax from $11.40 to $4.275 per wine gallon. The difficulty in the revision, according to Mr. Burnett, lies in the Treasury Dept.'s requirements that the claim for drawback be placed on "sales" instead of "use" of alcohol. Estimated saving to users of non-beverage alcohol will amount to $40,000,000 a year.

"Up to early this year," said William Fitzhugh, president of National Folding Box Ass'n and the W. W. Fitzhugh Co., "the folding box industry had developed conversion packages to the extent that 215,000,000 lbs. of critical metals were saved, 8,000,000 board ft. of lumber, 750,000 lbs. of glass, and a quantity of other critical materials.

"On the other hand, a vast tonnage has been required for the manufacture of boxes of all kinds. In 1933 a total of less than 900,000 tons of boxboard was used for folding boxes. Now the demand is running close to 1,700,000 tons. I predict that in a few years it will be 2,500,000 tons."

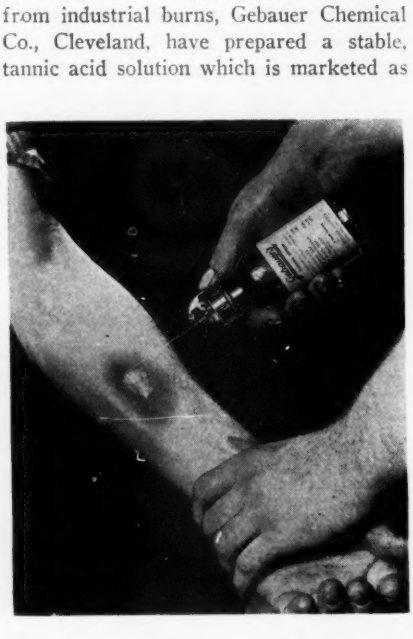
Officers re elected at the meeting included Lloyd E. Smith of Virginia Dare Extract Co., president, and William B. Durling and Garrett F. Meyer, vice presidents. George M. Chapman of Liquid Carbonic Corp., Chicago, was elected a vice president.

Study Textile Finishes

National Research Comm. of American Ass'n of Textile Chemists and Colorists has established a sub-committee on Textile Finishes under chairmanship of Kenneth H. Barnard, director, Product Research, Pacific Mills. At a recent meeting of the sub-committee, its agenda was established and will embrace the qualitative and quantitative determination of the newer synthetic finishes to include water repellents and mildew treatments.

Reduce Industrial Burns

According to "Accident Facts of 1942" published by the National Safety Council, Chicago, approximately 4½% of the industrial accidents known to the council were accounted for by burns and scalds. As a means of reducing man hour loss from industrial burns, Gebauer Chemical Co., Cleveland, have prepared a stable, tannic acid solution which is marketed as



Gebauer's Tannic Spray. The bottle closure is an automatic device which permits the spraying of the solution directly from the bottle over the affected burn area. The manufacturer claims that this tannic spray solution is stable, antiseptic and that it forms a tannic film over the area to which it is applied.

PERSONNEL

Charles F. Rohleder, has been appointed factory superintendent of Maas & Waldstein Co., maker of industrial finishes, Newark, N. J.

H. Martin Friedman, formerly with A. J. and J. O. Pilar, has joined Hart Products Corp. as chief chemist in charge of leather chemicals division.

Joins Monsanto

Dr. Donald H. Powers has been appointed to the staff of Merrimac Division, Monsanto Chemical Co., as specialist on applications of Monsanto chemicals in the textile industry.

Animal Extracts for Pest Control

Animal scents such as those of the skunk, weasel, snake and muskrat suggests Charles V. Sparhawk, Sparhawk Co., can be effectively incorporated into attractants and repellents for exterminating use. Says Mr. Sparhawk, the scent of skunk, incorporated with oil of cedarwood is even more potent than the presence of a cat or ferret in ridding a building of rodent pests, because the scent of skunk can be spread throughout the entire building.

Addition of glandular extract of muskrat into an attractant, he believes would act as a powerful lure for meat-feeding animals such as rats and mice. Flies and flying-insects are attracted towards a piece of exposed meat. Muskrat extract, when incorporated with other baits and poisons will, according to Mr. Sparhawk, increase the effectiveness of insecticides.

Walter Saenger

Walter Saenger, vice president of Geigy Co., Inc., manufacturers of aniline colors and extracts, and president of Bayonne Co., manufacturers of aromatics, died of a heart ailment May 16 in his home. His age was 59.

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Kodak Chrome Alum is a uniform, crystalline product, completely soluble in water. It is held to rigid Kodak standards of chemical purity. Available in quantity for commercial use, it is recommended for the tanning, textile, and ceramics industries, and photography. Eastman Kodak Company, *Chemical Sales Division*, Rochester, N. Y.

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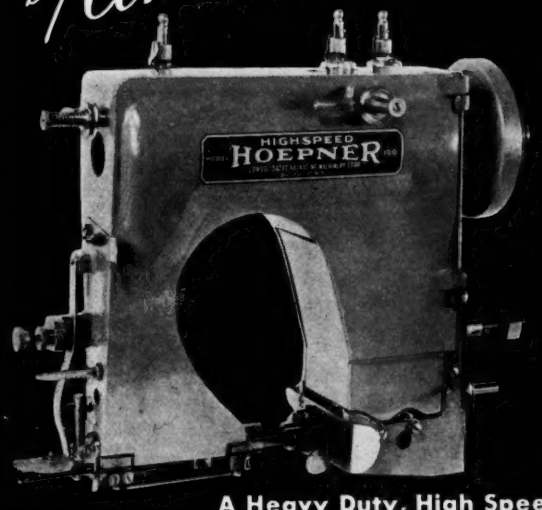

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Summary of War Regulations

Acrylonitrile—Form PD-602 substituted for PD-600 and PD-601 for use in delivery. Order M-153 amended.

Agar—All future reports and correspondence to be addressed to WPB Chemicals Division instead of the Health Supplies Branch. Order M-96 amended.

Ascorbic Acid—Method of allocating ascorbic acid for use in medicines and food products simplified to eliminate Form PD-600.

Alcohol Storage—Specific cents per barrel storage and handling charges established for alcohol belonging to Defense Supplies Corporation. General Maximum Price Regulation. Supplementary Regulation 14. Amendment 176 effective June 1.

Alkanolamines—Diethylethanolamine placed under allocation control and triethanolamine removed from control. Order M-275, amended May 26.

Butadiene—Form PD-602 substituted for PD-600 and PD-601 for use in delivery. Order M-178 amended.

Butyl Alcohol—Delivered price in Eastern territory for fermentation butyl alcohol produced in states other than Indiana and Illinois raised to 16.6¢ per pound until June 30, 1943, and 19¢ per pound after that date. Maximum Price Regulation 37, Amendment 4, May 7.

Butyl Alcohol—Acetic esters of butyl alcohol placed under allocation. Order M-159 amended.

Caffeine—Exceptions granted to six high-cost producers of caffeine which permitted them to sell at prices substantially higher than the general ceiling on caffeine are limited to apply only to the caffeine produced solely from high-cost or low yielding materials. Maximum Price Regulation 353, Amendment 1, May 21.

Chemicals—Sales of new chemicals in small quantities and sales of chemicals in the experimental stage of production are exempted from price control. General Maximum Price Regulation revised Supplementary Regulation 1 Amendment 9 effective June 5.

Chlorinated Solvents—Persons requiring chlorinated hydrocarbon solvents for uses for which a B2 Preference Rating was assigned are permitted to receive monthly up to 100% of their average monthly consumption during the year ended September 30, 1941. Users of carbon tetrachloride with B2 Rating are permitted to receive monthly up to 150% of their average monthly consumption during this period.

Citric Acid—Placed under allocation control effective July 1. Order M-321.

Color Pigments—Specific ceilings reflecting October 1941 levels established for dry, flushed and pulp color pigments. Transfers control from GMPR and rescinds certain price increases previously granted by OPA. Maximum Price Regulation 180 Revised.

Copper Sulfate—Distributors may charge retail ceiling price on retail sales of less than 300 pounds when sold for use as an agricultural insecticide or fungicide. Maximum Price Regulation 354, Amendment 2, May 17.

Cotton Bagging—Ceilings established for sales of cotton bagging by manufacturers to Commodity Credit Corporation and for resales by CCC.

Cotton Linters—Tallulah, Louisiana established as base point for determining freight rates applicable to sales of certain free cotton linters of the 1942 crop by the Commodity Credit Corporation. Maximum Price Regulation 190, Amendment 2, May 27.

Ethyl Cellulose—Exemption limit for small orders lowered from 50 pounds to 10 pounds except where material is to be used for experimental purposes in which case the 50 pound limit remains. Order M-175 amended, May 10.

Fibre Drums—Shipments of cylindrical fibre shipping drums by manufacturers placed under allocation control. Indirect inventory restriction of 60 days placed on purchasers of fibre drums. Order M-313. June 16.

Glycerine—Maximum Price Regulation of crude and refined glycerine revised to fit in more exactly with conditions in the industry. Maximum Price Regulation 38.

Isopropyl Alcohol—Form PD-602 substituted for Forms PD-600 and PD-601 for use or delivery of Isopropyl Alcohol. Order M-168 amended.

Lead—Restrictions eased. Only non-essential uses will be controlled and only items on list A will be prohibited from any use whatever. All supplementary M-38 orders revoked, except M38C which has been superseded. Order M-38 amended.

Methyl Isobutyl Ketone—Placed under allocation control. Order M-327. June 1.

Micro-Crystalline Wax—Placed under allocation control. Order M-195. May 20.

Oils—Animal, neat's foot and red oils placed under allocation control effective July 1. Food Distribution Order 53.

Nitrocellulose, Soluble—Order M-196 revoked, discontinuing control of production and distribution of soluble nitrocellulose. May 15.

Paperboard Containers—Specific ceilings established for sales of paperboard liquid-type cylindrical containers by manufacturers, distributors and jobbers. Maximum Price Regulation 359. Amendment 2 effective June 3.

Petroleum Products — Industrial naphthas, solvents, mineral oil polymers and petroleum sulfonates taken out from under General Maximum Price Regulation and placed under Revised Price Schedule 88. Sellers are allowed option of retaining ceilings already established under GMPR or using alternative method in RPS 88. Revised Price Schedule 88, Amendment 95, May 13.

Phosphate Plasticizers—Diphenyl Mono-Orthoxenyl Phosphate and Di-Orthoxenyl Mono-Phenyl Phosphate plasticizers placed under allocation control. Order M-183. June 1.

Styrene—Form PD-602 substituted for PD-600 and PD-601 for use in delivery. Order M-170, amended.

Sulfamic Acid—Form PD-602 substituted for forms PD-600 and PD-601 for authorization to accept delivery or deliver sulfamic acid and its derivatives. Order M-242, amended.

Tung Oil—Use as a base for cargo ship paints will not be permitted after July 1. Announcement by War Food Administration.

Zein—(Alcohol Soluble Protein derived from corn). Placed under allocation. Order M-320. June 1.

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MARKETS IN REVIEW

PRODUCTION of chemicals continues at top speed in many branches, especially in the munitions-feeding lines, heavy chemicals and acids, and the whole synthetic organic list. The pressure of military requirements now may be increasingly felt over the coming months as the theatre of war shifts from North Africa to the European continent, later to the Far East.

These enlarged military and war production activities still ahead may call for every resource industry in this country has at its command. Chemicals have come to assume a role in this titanic world struggle not fully realized outside of the industry itself. Recently, the new Director of War Mobilization, James F. Byrnes, gave an idea of chemicals' essential part in modern war which proved more eloquent than dollar or tonnage volume data.

He made particular reference to the fact that high explosives production has been six times greater than that of the first world war. The chemical industry has provided tremendous quantities of chemicals, industrial gases and light metals for use in building more than 100,000 airplanes in five months (up to June 1, 1943). It has also played a large part in supplying materials for 100 fighting ships, over 1000 ocean-going cargo ships and nearly 100 tankers in 12 months' time.

This is the industry that supplied acids, ammonia, magnesium salts, chlorates, toluene, hexamine and other chemicals for 44,830,000 lbs. of bombs, block busters and incendiaries during a three-year period.

Carbide and Shipping: Even the War Production Board's power, wisely and carefully applied in cooperation with the chemical industry, could not be expected to avert shortages in this program. Calcium carbide is one of the major supply deficiencies at present which is cause for some concern. It could not be seen in 1940 or 1941 that carbide, acetylene and oxygen would be employed on their present scale for ship and tank construction, plane assembly and other war work. New capacity for acetylene and oxygen is under construction, but the new production from these extensions may not be available until the fall. Hence, carbide will have to be used carefully until that time.

About one-half of the production enters shipbuilding. The remainder is needed for acetic acid via acetaldehyde, neoprene rubber, trichlorethylene, and various other synthetic organic processes. These products, which probably feel the carbide pinch in varying degree, should be the beneficiaries of enlarged carbide acetylene capacity at the close of the war.

Pharmaceutical manufacturers still face many raw material difficulties coupled with troublesome price regulatory orders. Chemical intermediates for the production of the antimalarials, atabrine and plasmochin, sulfa compounds and synthetic vitamins, are required in very large volume while the yield on a percentage basis is very small. Seven complicated intermediates totaling 3,000,000 lbs. are needed for atabrine this year, and in their manufacture some 25,000,000 lbs. of chemical raw materials are required. These figures are industry estimates. The production of actual atabrine probably will not run much above a half million pounds for 1943, affording a striking illustration of the processing efforts and costs which attend some phases of organic chemical production. Still, atabrine production has been increased 16,000 per cent over prewar outputs.

On a volume basis, more than 40 times as many raw chemicals are necessary for the processing of a given quantity of vitamins, yet the output of this new industry has expanded by leaps and bounds in a few years' time. Fortunately, such starting materials as sorbose and thiourea and processing necessities which include hydrochloric and sulfuric acids, alcohol, chloroform, are all available in sufficient quantities. The cosmetic industry's essential needs are simple and plentiful but it has had to get along without two of its most important raw materials—alcohol and glycerine.

Heavy Chemicals: Active demands were received during the month for acids, alkalies, chrome compounds and various nitrogen materials for fertilizer use. The leading manufacturer of synthetic nitrate of soda extended his May quotation, $27 per ton in bulk, f.o.b. Hopewell, Va., to cover June shipments. Fertilizer manufacturers, uneasy over the potash supply prospects for next season, filed applications with the WPB for allotments. It is still too early to determine if potash supplies will prove sufficient. The 6 per cent freight rate reduction which went into effect May 15 was estimated to save farmers $225,000 on fertilizer. Chlorine restrictions remained in effect, but more bleach was made available to industry as WPB allocated less to the Army. Chrome compounds were all in a very tight supply position, due to home demands rather than Lend-Lease shipments. Those who handle alkali exports found shortages of severe proportions in these chemicals, with delays of weeks attending the filling of orders. Prices for heavy industrial chemicals on the whole were stable and free from regulatory orders. Some have recovered very little if at all from depression lows. Example: Copper sulfate, at $5 to $5.50 per 100 lbs., is only 1c. lb. better than its market in April 1936 and May 1938.

Fine Chemicals: Sulfa compounds and synthetic vitamins were in reduced supply in the open market. Sulfanilamide on spot was reduced 10c. per lb. to $1.05 for 100 or 250-lb. drums, and to 90c. lb. in 1,000-lb. lots, responding to volume production. This compound, as well as sulfathiazole, was being taken in substantial volume by government agencies. Warm weather accelerated the demand for tartaric acid and the resale market moved higher. Citric acid, normally consumed in large volume by the beverage lines, was absorbed for the armed services. Some talk was heard of the possibility of imports being resumed in argols, wine lees, and calcium tartrate from North Africa under a program considered by the government. In 1939 we brought in 5,000,000 lbs. of argols and 500,000 lbs. of calcium tartrate from Algeria, additional smaller quantities from Tunisia and Morocco. Following recent reductions in prices for synthetic ethyl alcohol, OPA lowered "Type S" antifreeze 10c. gallon, establishing a retail ceiling at $1. Synthetic camphor was reported in good demand, and half-ounce tablets which were scarce some time ago were now said to be in ample supply. Nearly all descriptions of synthetic vitamins were actively sought by the food and pharmaceutical lines. Butyl acetate was a strong and difficult item. The production of wood methanol and acetic acid would soon be adversely affected unless producers obtained better prices for charcoal, it was learned in this trade. Labor also is difficult to secure in this industry.

Coal Tar Products: Additional production of benzol this year is more than offset by rising demands from the new synthetic rubber plants, which need it for the ethyl benzene-styrene conversion, also by urgent requirements at aviation gasoline plants. Monochlorbenzene is now being taken in volume and more is being produced by the industry than dichlorbenzene. Toluol appears to be available for very few purposes aside from direct war uses. Creosote contracting has expanded recently, and naphthalene flakes, in which government buyers have been very active, are very difficult to obtain.

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Synthetic coatings producers leaned very heavily on tung oil and other rapid-drying oils before our entry into the war. Protective coatings have to be supplied in heavy quantity for all manner of fighting craft, for tanks, jeeps, planes, guns and shells. They have to dry fast—before they reach the end of the assembly line, also must be water and alkali-resistant. Tung oil which came in from China has disappeared, and our domestic production of this drying oil is hardly one-fortieth of our present needs. There are many answers to the drying oil problem; very few are entirely satisfactory.

The alkyd resin maker first had a phthalic anhydride problem; now it is glycerine and the oils. Dehydrated castor was a fast-developing industry before the war. It is currently demanded for various direct military uses; among them is the splitting of castor for capryl alcohol and plasticizers. The attention of the coatings industry is being increasingly drawn to isomerized forms of linseed oil, one type of which will reach the gel stage in some nine minutes after application. Fatty acids of the isomer of linseed are also said to have a speed-up effect on alkyd resins. Tall oil, a product of pulp operations in the South, rich in fatty and rosin acids, may become a source for fats and oils. Recovery at present is estimated at 70,000,000 lbs. a year, and the yield could be tripled if equipment were available.

Plastics production is still limited by the amount of chemical raw materials allocated for this purpose. According to one industry estimate, the output of all types this year is running between 200,000 and 250,000 tons, a total which includes the thermoplastic and thermosetting phenolics, aminoplasts, cellulose esters and others; vinyl polymers and copolymers, acetals, polyacrylic esters, and polystyrene in all forms. These figures evidently omit some resinous materials recently placed in production as replacements for rubber, and if included they would send the aggregate above 350,000 tons. Productive capacity has been expanded for both resins and their chemical raw materials but there are no indications that war requirements have been fully satisfied.

Steel production is in the neighborhood of 86,000,000 tons, and that of copper, aluminum, magnesium and other nonferrous metals several million tons in addition, so that the prospects of plastics taking over generally as industrial materials after this war appear very slim. But their properties assure them of steady and growing peace-time outlets, notwithstanding. Phenolic and styrene polymer types are certain to command large applications in the electrical industry, and the same might be said for vinyl polymers. The enormous increase that has taken place in plant capacity for acrylic airplane enclosures and turrets points to possible wide uses in automobile and home construction. In April of this year one acrylic manufacturer had increased production 40 times over his 1939 output.

Plasticizers at the moment appear to be the concern in official quarters rather than additional resins-making or fabricating plant capacity. It is probable that expanded production of butyl acetate and phthalic anhydride may be sought in this connection. Plasticizers of the butyl type evidently occasion more uneasiness than they did earlier in the war. Supplies of tricresyl phosphate, the fire-retardant for cellulose nitrate, and its related triphenyl evidently are in ample supply for the cellulose nitrate and acetate plastic demands.

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LEGAL ADVENTURES OF A CHEMIST

6. Case of the Disputed Insurance

THREE telephone conversations, a fire and an insurance policy made up Chemist Smith's latest legal adventure.

Telephone conversation No. 1:

"Yes, this is the manager of the Xyro Chemical Company."

"Smith speaking. How much will you take for all your chemicals in the Orton warehouse—lock, stock and barrel?"

"$12,000."

"You've sold and I've bought."

Smith then dialed another number for telephone conversation No. 2.

"That the Midland Insurance Company?"

"Yes."

"This is Chemist Smith talking. I just bought all the chemicals in the Xyro Company's warehouse, for $12,000, and I want the usual fire policy to cover it."

"You'll have the policy this P. M."

Five days later Smith hurriedly called the Insurance Company for the third and last conversation.

"This is Smith again. I've just learned that fire has destroyed all my chemicals at the Orton warehouse that I insured with you the other day."

"We know that," the Midland manager answered, "but we also know (now) that your purchase of those chemicals was oral and so was not binding in law, so you had nothing to insure. Sorry, but we don't owe you anything."

"You may be right," was Smith's comeback, "but we'll have to see what the courts say on that point."

"The oral contract to purchase was not void or illegal by reason of the statute of frauds: it affects the remedy only as between the parties, and not the validity of the contract itself; and where the contract has actually been performed, even as between the parties themselves, it stands unaffected by the statute," said the Massachusetts Supreme Judicial Court, in ruling in Chemist Smith's favor. Amsinck vs. American Insurance Co., 129 Mass., 185.

7. Case of the "Sample Sale"

IF Chemist Smith orders chemicals totalling $50 or more, and there is no written memo of this sale, he must make a part payment or accept part of the order to make the sale binding, as every errand boy knows.

If Smith orders chemicals "by sample," keeps the samples in his possession, but receives none of the actual order, has there been an "acceptance and receipt of part of the goods so sold" which will make the sale a binding one:

(1). When there is no agreement in reference to the samples?

(2). When the samples are considered as part of the order?

(1). "No."

(2). "Yes."

"The receipt and acceptance by the buyer of samples of the chemicals are held to be a compliance with the statute as a part of the chemicals sold and as diminishing the quantity to that extent; otherwise the taking of samples has no effect upon the validity of the contract," is a concise summary of the rule laid down by the Maryland Court of Appeals in Richardson vs. Smith, 60 Atlantic 612.

To Clarify WPB Forms

Simplified system of identifying War Production Board forms is being put into effect as present stocks are exhausted and reprinting becomes necessary. All forms in the WPB, PD, UF and RD series and many in the CMP series which must be filled out and returned to WPB by manufacturers and others will eventually bear only the initials WPB, followed by new serial numbers. It is expected that several months will elapse before all forms will bear the the new numbers.

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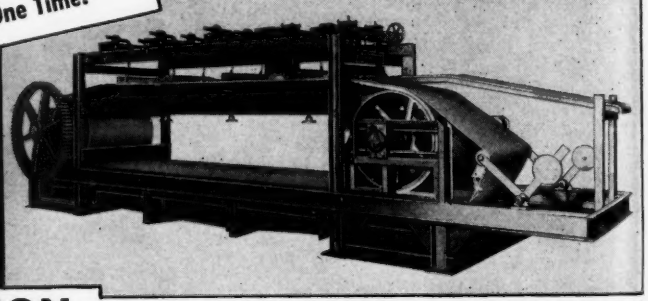

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Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00
May 1941 $1.09 May 1942 $0.938 May 1943 $0.891

	Current Market	1943 Low	1943 High	1942 Low	1942 High
Acetaldehyde, 99%, drs. wks. lb.	...	.11	...	.11	.11	.11
Acetic Anhydride, drs. c-l, lb.	...	.11½	.11½	.11½	.11½	.13
Acetone, tks, delv (*PC*) .. lb.	...	.07	...	.07	.07	.158
ACIDS						
Acetic, 28%, bbls (*PC*) 100 lbs.	3.38	3.63	3.38	3.63	3.38	3.63
glacial, bbls. .....100 lbs.	9.15	9.40	9.15	9.40	9.15	9.40
tks, wks .....100 lbs.	...	6.93	...	6.93	6.25	6.93
Acetylsalicylic, USP, (*PC*) Standard USP .....lb.	.40	.54	.40	.54	.40	.40
Benzoic, tech, bbls .....lb.	.43	.47	.43	.47	.43	.47
USP, bbls .....lb.	.54	.59	.54	.59	.54	.59
Boric, tech, bbls, c-l,...ton *a*	...	109.00	...	109.00	108.00	109.00
Chlorosulfonic, drs. wks lb	.03	.04½	.03	.04½	.03	.04½
Citric, crys, gran, bbls, c-l lb.*b*	.20	.24	.20	.24	.20	.21
Cresylic 50%, 210-215° HB, drs, wks, frt equal (A)gal.	.81	.83	.81	.83	.81	.86
Formic, tech, cbys ... lb.	.10½	.11½	.10½	.11½	.10½	.11½
Hydrofluoric, 30% drs ...lb.	.08	.09	.08	.09	.06	.06½
Lactic, 22%, lgt, bbls wks lb.	.039	.0415	.039	.0415	.039	.0415
44%, light, bbls wks .lb.	.073	.0755	.073	.0755	.073	.0755
Maleic, Anhydride, drs lb.	.25	.26	.25	.26	.25	.26
Muriatic, 18° cbys ...100 lb.	1.50	2.45	1.50	2.45	...	...
20° cbys, c-l, wks ..100 lb.	..	1.75	..	1.75	1.75	1.75
22° cbys, c-l, wks 100 lb.		2.25		2.25	2.25	2.25
Nitric, 36°, cbys, wks 100 lbs. *c*	5.00	5.95	5.00	5.95	5.00	5.00
38°, c-l, cbys, wks 100 lbs. *c*	...	5.50	...	5.50	5.50	5.50
40°, c-l, cbys, wks 100 lbs. *c*	...	6.00	...	6.00	6.00	6.00
42°, c-l, cbys, wks 100 lbs. *c*	...	6.50	...	6.50	6.50	6.50
Oxalic, bbls, wks (*PC*) ..lb.	.11¼	.12½	.11¼	.12½	.11¼	.14½
Phosphoric, 75% USP, ..lb.	.10½	.13	...	.12	.12	.12
Salicylic, tech, wks (*PC*)..lb.	.26	.42	.26	.42	...	.33
Sulfuric, 60°, tks, wks ..ton	...	13.00	...	13.00	...	13.00
66°, tks, wks .....ton	...	16.50	...	16.50	...	16.50
Fuming (Oleum) 20% tks. wks .....ton	...	19.50	...	19.50	...	19.50
Tartaric, USP, bbls .....lb.	...	.70½	...	.70½	...	.70½
Alcohol, Amyl (from Pentane) tks, delv .....lb.	...	.131	...	.131	...	.131
Butyl, normal, tks (*PC*) lb.	.10¾	.14¼	.10¾	.14¼	.10¾	.168
Denatured, CD, 14, c-l drs, (*PC, FP*) ....gal. *d*	...	.54½	...	.54½	...	.65
Denatured, SD, No. 1, tks. *d*	...	.50	...	.50	...	.53
Ethyl, 190 proof tks....gal	...	11.90	11.90	11.92	8.12	11.92
Isobutyl, ref'd, lcl, drs lb.	...	.086	...	.086	...	.086
Isopropyl, ref'd, 91% gal.	.39	.43½	.39	.43½	.40½	.43½
Propyl, nor, drs, wks gal.	.67	.70	.67	.70	.69	.75
Alum, ammonia, lump, c-l, bbls, wks .....100 lb.	...	4.25	...	4.25	...	4.25
Aluminum metal, (*FP*) 100 lb.	15.00	16.00	15.00	16.00	15.00	16.00
Chloride anhyd 99% wks lb.	.08	.12	.08	.12	.08	.12
Hydrate, light, bgs (A) lb.	...	.14½	...	.14½	...	.14½
Sulfate, com, bgs, wks 100 lb.	1.15	1.25	1.15	1.25	1.15	1.25
Sulfate, iron-free, c-l, bgs, wks .....100 lb.	1.75	1.85	1.75	1.85	1.75	1.85
Ammonia anhyd, 100 lb cyl lb.	...	.16	...	.16	...	.16
Ammonium Carbonate, lumps, dms .....lb.	.08½	.09¼	.08¼	.09¼	.08¼	.09¼
Chloride,whi,bbls,wks,100 lb.	4.45	5.15	4.45	5.15	4.45	...
Nitrate, tech. bags. wks. lb.	.0435	.0850	.0435	.0850	.0435	.0455
Oxalate pure, grn, bbls..lb.	.27	.33	.27	.33	.27	.33
Perchlorate, kgs (A) ...lb.	.55	.65	.55	.65	.55	.65
Phosphate, dibasic tech, bbls .....lb.	.07¼	.08½	.07¼	.08½	.09¼	.09¼
Stearate, anhyd, drs ....lb.	...	.34	...	.34	...	...
Sulfate, f.o.b., bulk (A) ton	28.20	29.20	29.00	30.00	29.00	30.00
Amyl Acetate (from pentane) c-l, drs, delv .....lb.		.155		.155		.155
Aniline Oil, drs and tks..lb.	.10½	.12½	.10½	.12½	.12½	.16
Anthraquinone, sub, bbls..lb.	...	.70	...	.70	...	.70
Antimony Oxide, 500 lb. bbls (A) .....lb.	.15	.15½	.15	.15½	.15	.16½
Arsenic, whi, kgs (A)....lb.	.04	.04¾	.04	.04¾	.04	.04¾
Barium Carbonate precip, 200 lb bgs, wks ....ton	55.00	65.00	55.00	65.00	55.00	65.00
Chloride, delv, zone 1..ton	77.00	90.00	77.00	90.00	77.00	92.00

USP $25 higher; Prices are f.o.b. N. Y., Chicago, St. Louis, deliveries ½c higher than NYC prices; *y* Price given is per gal; *c* Yellow grades 25c per 100 lbs. less in each case; *d* Prices given are Eastern schedule. *a* Powdered boric acid $5 a ton higher; *b* Powdered citric is ½c higher;

BOOKLETS & CATALOGS

Chemicals

A509. *Catalogue of Books* and Pamphlets on geology, coal, oil, etc. has been published by The Gourmet Co.

A510. *"Cleanup."* Decreasing dermatitis spread by bacteria in cutting oils, absenteeism caused by fungi producing athlete's foot, and lavatory maintenance via chemical methods are reported in April issue of the magazine. The C. B. Dolge Co.

A511. *Creosoted Piles.* April issue of "Wood Preserving News" describes a method of recording and evaluating test pile data. Also contains news concerning uses of creosoted timber. American Wood-Preservers Ass'n.

A512. *"Hercules Chemist."* No. 12 of this colorful, attractively designed house organ reviews some of the results achieved in experiments with rosin in soap. Also describes technically several of the company's services and products, including ethyl cellulose plastics, photoelectric rosin grader, and Abalyn and Hercolyn—asphalt modifiers. Hercules Powder Co.

A513. *Laboratory Apparatus.* Booklet takes you on a tour through the new Eimer and Amend plant. Photographed are the machine shop, the glass-blowing shop, the chemical manufacturing facilities, chemical stock rooms, and packaging department. Eimer and Amend.

A514. *Lye Peeling.* Tremendous expansion of dehydration has given impetus to investigation of methods for improvement in lye peeling of potatoes. This 35-page booklet outlines the results of the company's studies in the use of caustic soda, lye peeling flow sheet, lye peelers (types and sizes), lye peeler capacity, preliminary clean-up of potatoes, caustic action on the potato, lye penetration, temperature of lye bath, strength of bath, etc. Illustrated with series of graphs, photographs, technical tables. Diamond Alkali Co.

A516. *"Nickelsworth."* Acid baths for wartime steel, pickling and annealing of brass, atmospheres for bright annealing, and lead evaporator to recover harden bath chemicals used in the production of rayon are the items briefly reported in first quarter of this publication. The International Nickel Co., Inc.

A517. *Paint.* National Bureau of Standards recommendations for mixing white lead paint with less linseed oil are reported in current issue of *Dutch Boy Painter.* National Lead Co.

A518. *"Resin News,"* April issue, lists government agency specifications for various products employing resins, supplemented by suggested formulations for certain of the finishes. Stroock & Wittenberg.

A519. *Rosin Esters.* Twelve page booklet on Flexalyn and Flexalyn C, balsamic esters of rosin, describes their chemical and physical properties, various applications in organic coatings, adhesive masses, etc. Lists properties of Flexalyn-modified casein films and methods for incorporating Flexalyn in casein compositions. Complete with technical tables. Hercules Powder Co.

A520. *Soy Beans and Peanuts* as sources of proteins and vitamins for fortifying war-time diets that are scarce in meats are discussed at length in the Spring edition of *The Chemical Digest.* Foster D. Snell, Inc.

A521. *Synthetic Rubber.* Catalog section on properties of Ameripol D discusses its resistance to deteriorating agents, hardness, tensile strength, elongation, weight, color, odor, taste, elasticity and permanent set, resistance to tear, abrasion, flexing, oils and solvents and heat. Tables list the properties of various compounds of Ameripol D. Catalog Section 8000. The B. F. Goodrich Co.

A522. *Synthetic Rubber.* Nontechnical discussion of its history and development. Article contains photographs of the processes involved. Current issue of *Steel Horizons* also reviews the absentee situation and what to do about it. Allegheny Ludlum Steel Corporation.

A523. *"Vitamin Protection Means Production and Profit,"* attractively designed 14-page booklet, describes the various plans of vitamin distribution now in use among concerns. Case histories are briefly given and nutritional and medical authorities cited. Vitamins Industrial.

A524. *Water Treatment.* April issue of *The Betz Indicator* contains No. 15 in the series of articles on unit processes of water treatment. In this particular study J. H. Richards discusses acid treatment before and after zeolite. Includes tables of feedwaters, boiler water, and chemical treatment costs. W. H. & L. D. Betz.

A526. *Zinc Plating* as a substitute for cadmium plating is the subject of 14-page technical report which gives descriptions of still and barrel plating using a pre-cleaner. Methods for using three pre-cleaners and a final cleaner are outlined. Turco Products, Inc.

Equipment — Containers

E894. *Air-Operated Controllers, Convertible.* Eight-page bulletin, No. A112, describes this line of free-vane controllers and gives data on the five controllers offered along with information on converting from one type to another. The Bristol Co.

E895. *Bags.* Current situation in burlap and cotton for bags is discussed in recent issue of "Bagology." Chase Bag Co.

E896. *Boiler Feed and Process Water Deaeration.* Comprehensive 36-page treatment of tray-type deaerators, atomizing deaerators, deaerating hot water generators, and cold water deaerators. Sections are devoted to corrosion control, pH control, and flow

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CHEMICAL INDUSTRIES

The Chemical Business Magazine

522 FIFTH AVENUE

NEW YORK, N. Y.

diagrams and photographs of the installations described. Publication No. 3005. Cochrane Corp.

E897. *Electric Equipment* for aviation-gasoline plants. Attractive 50-page spiral-bound bulletin GEA-3147 describes in concise, illustrated form types of electric equipment available for such plants. Included is apparatus developed to meet special conditions. Booklet is divided into three sections—Power Generation, Power Distribution, and Power Utilization. Among the tools highlighted are turbine-generators, switchgear, load-center unit substations, cable, mechanical-drive turbines, various types of motors and controls, and cycletimers. General Electric Co.

E898. *Equipment.* 16-Page booklet describes the services offered by L. O. Koven & Brother, Inc., "Fabricators of Steel and Alloy Industrial Equipment, Engineers, Machinists, and Galvanizers." L. O. Koven & Brother, Inc.

E899. *Equipment.* Vol. 11, No. 6 of *The Houghton Line* briefly discusses the job of the plant lubrication engineer, hydraulic flushing, care of wooden barrels, conserving with group drives, and coolants. E. F. Houghton & Co.

E900. *Explosive Rivets.* Illustrated folder contains information on selecting the proper size and type of rivet, preparing rivet holes, handling, storing and expanding the rivets, and use and maintenance of riveting iron. Explosives Dept., E. I. du Pont de Nemours & Co.

E901. *Gaskets.* First of a series of technical bulletins on industrial gaskets, describes the company's research laboratory and method of testing the factors in gasket engineering. Illustrated with photomicrographs, graphs, and tables of factors determined under service conditions. Goetze Gasket and Packing Co.

E902. *Miniature Precision Bearings.* Bulletin 43 details dimensions of radial and pivot type bearings from ⅛ to 5/16 inches outside diameter in both steel and non-magnetic beryllium. Tabulations give load ratings at varying speeds for each size and type of bearing. Miniature Precision Bearings.

E903. *Pulley Lagging.* Circular describes this lagging which, it is claimed, has a pile-face surface designed to promote better traction and longer belt life. Its solid woven base is said to prevent bolts or screws from pulling out. Victor Ballata & Textile Belting Co.

E904. *Steam-Generating Equipment.* "Dividends from Your Power Plant" is the title of a 36-page booklet devoted to the economical operation of such machinery. Discusses the dollars and cents importance of boiler efficiency, the relation between steam costs and profits, natural versus mechanical draft, carbon dioxide and carbon monoxide, excess air, and factors that govern labor costs in boiler room. Preferred Utilities Co., Inc.

E905. *Steel.* According to April issue of *Steel Facts*, the steelmaking capacity of nation expanded sharply during 1942. Another article covers the steel furnaces activity for the same year. Charts and graphs illustrate the increased production. American Iron and Steel Institute.

E906. *Steelstrapping* torpedoes, lifeboats, foundry supplies, and other materials are briefly reviewed in current issue of *Acme Process News.* Acme Steel Co.

E907. *Tank Linings* that are corrosion-resistant are studied in Bulletin 1502. Suggests use of a resinous, thermoplastic material — Resilon — which is resistant to many acids, bases, and salts. However it cannot be used to handle certain organic solvents, strong oxidizing agents, oils, gasolines, benzol, etc. Eight-page booklet lists its physical and chemical properties, applications, and methods of installation. The U. S. Stoneware Co.

E908. *Teaching Women* to run industrial trucks. Easy-to-understand booklet of instructions to help companies break in women drivers of industrial trucks. Illustrated with photographs, the manual tells the prospective woman operator how to run the truck and gives pointers on how it should be cared for. Elwell-Parker Electric Co.

E909. *Temperature* Instruments for Steam Plant. New 36-page catalog N-33-163 describes temperature recorders for use with thermocouples or with thermohm resistance thermometers. Discusses applications to temperature measurement of steam, feedwater and cooling water. Includes description of optical pyrometer. Also contains discussion of principles of thermocouple and potentiometer, thermohm and wheatstone bridge. Leeds & Northrup Co.

E910. *Temperature (High) Lubricant.* Use of colloidal graphite for lubrication of core oven conveyors, kiln cars, deep forging dies, high intensity searchlights are briefly reviewed in Bulletin No. 423. T. Acheson Colloids Corp.

E911. *Turbine Theory and Principles* are described graphically in a new movie of steam turbine operation. Using simplified, animated drawings, the camera takes you through the interior of the turbine chamber, the governor system, blading, bearings, and lubrication system, while the voice explains the construction and movement of each working part. 16 Millimeter prints of the film are available for loan without charge. Allis-Chalmers.

E912. *Valves.* Data on 150, 300 and 600 lb. cast steel butterfly valves that are precision machined and wedge-tight are contained in diagrammatic sketches and dimension tables. R-S Products Corp.

E913. *Womanpower.* Report No. 136 digests facts pertaining to employment of women in war industries. Includes: Types of work in which women prove effective, factory re-engineering to accommodate women workers, supervising and training women, health, absenteeism, transportation, child care problems, and rating women's work output. George S. May Business Foundation.

E914. *Wire.* *"D-H Alloy Craftsman,"* Vol. 111, No. 2, lists the various applications for which alloy wire is employed. Driver-Harris Co.

* * * * * * * * * * * * * * *

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A509	A517	A525	E900	E908	QC254
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A512	A520	E895	E903	E911	QC257
A513	A521	E896	E904	E912	QC258
A514	A522	E897	E905	E913	QC259
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U.S.I. CHEMICAL NEWS

June ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1943

Indalone Available To Companies Having High Priority Ratings

Insect-Repellent Is Now Obtainable from U.S.I.

Quantities of Indalone, an insect-repellent outstanding for its slow-evaporating and film-forming characteristics, are now available from U.S.I. to companies having high priority ratings.

Virtually odorless and non-greasy, Indalone owes its repellency to its bitter taste and its effect on the nerve endings in the feet of insects. Of particular interest today is the ability of Indalone to repel effectively such insects as biting flies, mosquitoes, chiggers and other insects.

Additional information on the properties and uses of Indalone will be gladly furnished by U.S.I. on request.

To save lives of crashed pilots, a truck has been developed which smothers the flames of a burning plane in less than three minutes with thousands of pounds of carbonic acid ("DRY-ICE"*). Streams of CO_2 are sprayed from the main boom nozzle and from two bumper outlets in front of the tires.

* Pure Carbonic, Incorporated, sells "DRY-ICE" manufactured by U.S.I

Methoxyl, Ethoxyl Groups Determined by New Method

MONTREAL, Canada — What is claimed to be a simpler and more accurate method for the simultaneous determination of methoxyl and ethoxyl groups has been developed by two research workers here.

The difficulty normally encountered in completely removing crystalline tetramethyl salt is said to have been overcome by washing out the absorption tubes with a small quantity of water followed by stock 97% ethanol. This innovation is reported to have also obviated the necessity for using an absolute ethanol solution of trimethylamine.

The difficulty in isolating the ethyl iodide quantitatively, encountered in present methods for a combined methoxyl-ethoxyl determination, is said to have been overcome by first determining total alkoxyl according to the standard Vieböck-modified Zeisel procedure, then determining the methoxyl content alone according to a modified Wilstätter procedure.

Ethyl Acetoacetate Plays Vital Role In Anti-Malarials, Vitamin B_1

U.S.I. Intermediate Used in Synthesis of Quinacrine Hydrochloride, Plasmoquin and Thiamin Hydrochloride

Ethyl acetoacetate, which has heretofore found principal use in the manufacture of the pyrazolone and Hansa Yellow pigments, has now assumed a vital role in the production of the strategic products, Quinacrine hydrochloride (Atebrin), Plasmoquin, and Thiamin hydrochloride (Vitamin B_1). These three products are playing a very important part in the war and will undoubtedly be extremely valuable in the peace to follow. In addition, ethyl acetoacetate can be used in the synthesis of the essential amino acids. In all of these syntheses, the ethyl acetoacetate is first converted to the sodium salt with sodium ethoxide.

Used as Substitutes

Quinacrine and Plasmoquin are the synthetic anti-malarials which are being substituted for the unobtainable quinine and other alkaloids usually imported from the Dutch East Indies. Quinacrine and Plasmoquin have the same side chain, 4-amino-1-diethyl amino pentane, attached to 3-chloro-7-methoxy-acridone and methoxy-quinoline respectively. It is in the preparation of this side chain that the ethyl sodium acetoacetate is used. This synthesis is represented by the first three reactions in the box below.

In the synthesis of thiamin, ethyl sodium acetoacetate is reacted with ethylene oxide to give alpha acetyl gamma butyro lactone. From the alpha acetyl butyro lactone, either 4-methyl, 5-beta-hydroxyethyl thiazole or 2-methyl-2-ethoxy-3-chloro tetra-hydro furane is prepared which are condensed with 2-methyl-4-amino-5-halogeno methyl pyrimidine and 2-methyl-4-amino-5-thioformylamino methyl pyrimidine respectively to give vitamin B_1. The commercial production of thiamin is now well established and indications are that the volume will be substantially increased in the months to come.

Amino Acids

Several investigations have shown that there are ten amino acids which are essential for human and animal life. With the projected nutrition programs, these amino acids should become of increasing importance. Starting with ethyl sodium acetoacetate, it is indicated that these amino acids can be made according to the fourth reaction in the box below.

(Continued on next page)

Advise Low Temperature Crystallization Oil Analysis

MADISON, Wis. — Speed and applicability to small samples are among the advantages claimed by three research workers here for the use of low temperature crystallization from acetone solution as a method of determining the saturated fatty acids in glycerides.

The fatty acids are dissolved in dried, redistilled acetone in a 50 cc. centrifuge tube which is then immersed in a low temperature alcohol bath. The temperature is lowered to —40°C. by the addition of solid carbon dioxide. After standing 15 to 20 minutes the tube is placed in a metal centrifuge tube cooled to the same temperature and centrifuged briefly to throw out the crystalline saturated acids. The supernatant solution is then transferred to a weighed tube. Acetone at —40°C. is blown from a pipette into the tube containing the saturated acids and the tube rotated rapidly to wash the precipitate.

Preparation of Membranes for Ultrafilter in Tanning Studies

CINCINNATI, Ohio — A new method for the preparation of membranes to be used in ultrafiltration in tanning research, that differs principally from other procedures in the evaporation of solvents and in the mechanics of calibration, was recently revealed by a chemist here.

In the preparation of membranes by this method, a portion of the solvents is evaporated from a collodion solution with the resultant formation of a gel.

A stock solution of the following composition is recommended:

Parlodion (Mallinckrodt)	150 gm.
Absolute ethanol	316 ml.
Absolute ethyl ether	1043 ml.
Acetone	1453 ml.
Amyl alcohol	575 ml.

Ethyl Sodium Acetoacetate Used in Preparing Quinacrine and Plasmoquin Side Chains

$$(C_2H_5)_2NC_2H_4OH + HCl \longrightarrow (C_2H_5)_2NC_2H_4Cl + H_2O$$

$$(C_2H_5)_2NC_2H_4Cl + CH_3C(ONa):CHCOOC_2H_5 \longrightarrow CH_3COCHCOOC_2H_5$$

$$\text{with } CH_2CH_2N(C_2H_5)_2$$

$$H_2O \downarrow \text{ Decarboxylate}$$

$$CH_3COCH_2CH_2CH_2N(C_2H_5)_2$$

$$CH_3COCH_2CH_2CH_2N(C_2H_5)_2 + NH_3 \xrightarrow{H_2} CH_3CHNH_2CH_2CH_2CH_2N(C_2H_5)_2$$

Amino Acids Made With Ethyl Sodium Acetoacetate

$$CH_3C(ONa):CHCOOC_2H_5 \xrightarrow{RCl} CH_3COCHRCOOC_2H_5 \xrightarrow{C_4H_9ONO + H_2SO_4}$$

$$RC:(NOH)COOH \xrightarrow{H_2} RC(NH_2)HCOOH$$

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June ★ **U.S.I. CHEMICAL NEWS** ★ 1943

Ethyl Acetoacetate Uses

(Continued from preceding page)

Important Properties

The reactions given are typical of the wide variety obtainable with ethyl acetoacetate which lead to an extended list of valuable products. The two properties which make it important in chemical synthesis are:

1. The reactivity of the hydrogen on the carbon adjacent to the $COOC_2H_5$ group. Hydrogen substitutions at this point lead to the introduction of groups such as halogen, metal, acyl and alkyl radials. Ammonia, aniline, urea and many other types of compounds containing the NH_2 group, add with the elimination of water.

2. The addition products (especially the amides) mentioned above have a tendency to close into ring structures of the most varied types, giving for example substituted pyrroles, pyrazoles, pyrazolones, pyrimidines, pyridines, quinolines, isoxazoles, furane and coumarin derivatives.

Crystallized Heart Stimulants Obtained by Simplified Method

NEPERA PARK, N. Y.—A patent has been assigned to a company here for what is claimed to be a simpler, better method of obtaining crystallized heart stimulants both from the amorphous products and directly from the crude extract of the raw material.

According to the invention, glucosides in crystallized form may be obtained from their solutions in organic solvents, or in a mixture of such solvents with water, by having same adsorbed on hydroxides of polyvalent metals, and afterwards fractionating and eluting from the adsorbing material. It is claimed that the pure products may be obtained from the eluates by evaporation, salting out or by precipitation.

Typical Procedure

Following is a typical example of the procedure: 5 grams of crude glycosides obtained from *Digitalis purpurea* are dissolved in a mixture of 80 cc. ethanol and 20 cc. acetone. To this solution, under shaking, first 10 cc. water is added and then a suspension of aluminum hydroxide (equivalent to 8 grams aluminum oxide) in 150 cc. of ethanol. The adsorbent is collected and eluted with pyridine. The pyridine solution is then concentrated to a small volume in vacuum and diluted with ethanol. On careful addition of water digitoxin is said to crystallize out.

Method for Spot Testing In Solvent Extractions

IVORYDALE, Ohio—A simple spot test for determining the completeness of extraction of fatty oils or other nonvolatile liquids with volatile solvents, has been evolved by a chemist here with the use of ground glass.

Drops of the solution under test and of the solvent are placed on a clean ground glass to evaporate. Depending on the amount of solute present, the transparencies formed are said to vary from that of the clean plate with the pure solvent to a disk of clear transparency of about the same area as that of the spot before evaporation. A wide variety of intensities lies between these extremes. At low concentrations of solute, one or more circular lines of approximately hairline thickness are formed. The residue can also be viewed against a dark background. The black test may show a slight hairline transparency of varying intensity when the solvent is impure.

The limit of sensitivity of the test described is about one part of solute in 20,000 parts of solvent. By allowing two or more drops of solution to evaporate on the same spot, or by dusting the spots with a dark powder, greater sensitivity can be obtained.

Paba Ester Is Utilized In New Thiamin Assay

CHICAGO, Ill.—A new thiamin assay has been developed by two professors here, based on the pink to red coloration formed when thiamin is reacted with diazotized ethyl *p*-aminobenzoate. The thiamin does not have to be absorbed prior to the application of the test.

In applying the new method, the colored compound resulting from the reaction of diazotized ethyl *p*-aminobenzoate and thiamin is extracted with isoamyl alcohol and the extract compared with a series of standards using a Pulfrich photometer. It is reported that maximum color is produced within two minutes and is stable for at least three months. Solutions containing as little as three to six gammas per five cc. of solution can be tested.

New Fungicide, Deodorant

ORADELL, N. J.—A patent has been awarded to an inventor here for a combination fungicide and deodorant which is composed of approximately one part of cadmium chloride, one part of sodium dioctylsulfosuccinate, and 98 parts of 30% ethyl alcohol.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A cleaner for plastic glass is announced which is said to emulsify grease and engine spatter. Among the claims made for this product are that it is non-toxic and safe on paint or hands, that it is free-rinsing, thus leaving no grease on the surface, and that it does not cause "crazing" or infinitesimal scratches. **(No. 700)**

U S I

A chemurgic rubber has been developed for use where service requirements are not too high. The maker claims it may be used independently or as an extender blended with natural, reclaim or synthetic rubber. Water, alcohol and lubricating oils are said to have no apparent effect on this product nor antioxidants upon accelerated aging tests. Its reactions to solvents and chemicals are generally similar to that of rubber. **(No. 701)**

U S I

A methyl salicylate substitute is offered for technical purposes only, not for food stuffs. **(No. 702)**

U S I

Dust masks and caps have been developed from a vegetable fibre product which the maker says may be stitched, washed and ironed. **(No. 703)**

U S I

An adhesive is announced for bonding a wide variety of products to themselves as well as to such other surfaces as cork, glass, rubber, leather, paper, fiberboard, and wood. Drying time on porous surfaces is said to be about 20 minutes, on non-porous surfaces somewhat longer. The bond is claimed to develop early strength and have high initial tack. **(No. 704)**

U S I

A hand cleaner is announced for the removal of paint, grease, grime, ink and other stains. The maker says it can be used without scrubbing and without soap or water. It is claimed to contain no grit or pumice stone. **(No. 705)**

U S I

A compound of reclaim rubber emulsion has been developed which is said to save 40% of the reclaim by substitution, to afford combining strength to cloth closely approaching that of latex, and to impart resistance to weakening in the presence of water far superior to the reclaim rubber itself. This compound is expected to find wide application where reclaim rubber and latex have been used as adhesives or coatings. **(No. 706)**

U S I

A dehydrated glue is offered in crystal and powder form which is said to decrease shipping bulk and improve final working qualities. **(No. 707)**

U S I

A liquid material for floors is announced which is claimed to produce a non-slip, wear-resisting surface that protects metal from corrosion and wood from moisture. This surface is also said to be resistant to the action of oil, grease, gasoline, salt, sulphur and cleaning materials. **(No. 708)**

U S I

Improved concrete dispersion is claimed for a new liquid put on the market. Added to a concrete mix in the proportion of 1 qt. per bag of Portland cement, it is said to reduce the amount of water used by 80%, improve workability of the mix, and increase compressive strength. **(No. 709)**

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*Solox D-I De-icing Fluid

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Amyl Acetate
Butyl Acetate
Ethyl Acetate

OXALIC ESTERS
Butyl Oxalate
Ethyl Oxalate

PHTHALIC ESTERS
Amyl Phthalate
Butyl Phthalate
Ethyl Phthalate

OTHER ESTERS
*Diatol
Ethyl Carbonate
Ethyl Chloroformate
Ethyl Formate

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-anisidide
Acetoacet-ortho-chloranilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloranilide
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate
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ETHERS
Ethyl Ether
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OTHER PRODUCTS
Acetone
Collodions
Curbay B-G
Curbay Binders
Curbay X (Powder)
Ethylene
Ethylene Glycol
Indalone
Nitrocellulose Solutions
Potash, Agricultural
Urethan
Vacatone

Current Prices

Barytes
Gums

	Current Market	1943 Low	1943 High	1942 Low	1942 High
Barytes, floated, bbls. c-l ton	...	36.00	...	36.00	...	...
Bauxite, bulk mines (A) ton	7.00	10.00	7.00	10.00	7.00	10.00
Benzaldehyde, tech, cbys, dms lb.	.45	.55	.45	.55	.45	.55
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd gal.	(A)	.15	(A)	.15	...	.15
Benzyl Chloride, cbys ....lb.	.22	.24	.22	.24	.22	.24
Beta-Naphthol, bbls, wks lb.	.23	.24	.23	.24	.23	.24
Bismuth metal, ton lots...lb.	...	1.25	...	1.25	...	1.25
BlancFixe, Pulp, bbls, wks ton *h*	40.00	46.50	40.00	46.50	40.00	46.50
Bleaching Powder, wks, 100 lb.	2.50	3.10	2.50	3.10	2.25	3.10
Borax, tech, c-l, bgs ....ton *i*	...	45.00	...	45.00	45.00	46.00
Bordeaux Mixture, drs ..lb.	.11	.11½	.11	.11½	.11	.11½
Bromine, cases .....lb.	.25	.30	.25	.30	.25	.30
Butyl, acetate, norm drs, lb.	.1225	.1675	.1225	.1675	.124	.168
Cadmium Metal (*PC*) .lb.	.90	.95	.90	.95	.90	.95
Calcium, Acetate, bgs. 100 lb.	3.00	4.00	3.00	4.00	3.00	4.00
Carbide, drs (A) c-l ....lb.	...	.04¾	...	.04¾	...	.04¾
Carbonate, tech, c-l bgs, ton	18.00	22.00	16.00	20.00	16.00	20.00
Chloride, flake, bgs c-l ton	18.50	35.00	18.50	35.00	...	21.00
Solid, 73-75% drs, c-l, ton	18.00	31.50	18.00	34.50	18.00	34.50
Gluconate, Pharm, drs ..lb.	...	.58	...	.58	.52	.59
Phosphate, tri, bbls ....lb.	.0635	.0785	.0635	.0705	.0635	.0705
Camphor, slabs .....lb.	.85	.90	.85	1.65	1.60	1.65
Carbon Bisulfide, 55-gal drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Dioxide, Liq, 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, (*FP*) (*PC*) drs, c-l .....lb.	.73	.80	...	.83	.73	.83
Casein, Standard, Dom, grd lb.	.21	.23¼	.21	.23¼	.15	.30½
Chlorine, cyls, lcl, wks, contract (*FP*) (A) .....lb.	...	.07¼	...	.07¼	...	.07¼
cyls, c-l, contract ..lb. *j*	...	.05¼	...	.05¼	...	.05¼
Liq, tk, wks, contract 100 llb.	...	1.75	...	1.75	...	1.75
Chloroform, tech, drs ....lb.	.20	.23	.20	.23	.20	.23
Coal tar, bbls .....lb.	8.25	9.25	8.25	9.25	7.50	9.25
Cobalt Acetate, bbls (A) lb.	...	.83¼	...	.83¼	...	.83¼
Oxide, black kgs (A) ..lb.	...	1.84	...	1.84	...	1.84
Copper, metal *FP*, *PC* 100 lb.	12.00	12.50	12.00	12.50	12.00	12.50
Carbonate, 52-54%, bbls lb.	.19½	.20	.18	.20½	.18	.20½
Sulfate, bbls, wks (A) 100 lb.	5.00	5.50	5.00	5.50	5.15	5.50
Copperas, bulk, c-l, wks ..ton	...	14.00	...	14.00	...	17.00
Cresol, USP, drs, (A) ....lb.	.10¼	.11¼	.10¼	.11¼	.10¼	.11½
Cyanamid, bgs, c-l, frt (A) .....ton	1.52½	1.62½	1.52½	1.62½	no prices	
Dibutylamine, c-l, drs. wks lb.	...	.61	...	.61	.50	.61
Dibutylphthalate, drs .....lb.	.20	.212	.21	.23½	.21	.23½
Diethylaniline, lb drs ....lb.	...	.40	...	.40	...	.40
Diethylphthalate, c-l, drs ..lb.	.212	.217	.212	.217	.21½	.22
Diethyleneglycol, drs lcl. wks. lb.	.14	.15½	.14	.15½	.14	.15½
Dimethylaniline, dms., cl., lcl. lb.	.23	.24	.23	.24	.23	.24
Dimethyl phthalate, drs ..lb.	.1970	.2050	.1970	.2050	...	.20
Dinitrobenzene, bbls .....lb.	...	.18	...	.18	...	.18
Dinitrochlorobenzene, dms lb.	...	.14	...	.14	...	.14
Dinitrophenol, bbls .....lb.	...	.22	...	.22	...	.22
Dinitrotoluene, dms .....lb.	...	.18	...	.18	...	.18
Diphenyl, bbls lcl. wks ....lb.	.15	.20	.15	.20	.15	.16
Diphenylamine bbls .....lb.	...	.25	...	.25	...	.25
Diphenylguanidine, drs ...lb.	.35	.37	.35	.37	.35	.37
Ether, Isopropyl, drs ....lb.	.06	.06½	.06	.06½	.07	.08
Ethyl Acetate, 85% Ester tks, frt all'd .....lb.	.107	.110	.107	.110	.11	.12
Chloride, drs .....lb.	.18	.20	.18	.20	.18	.20
Ethyene Anhydrous frt all'd .....lb.	...	.75	...	.75	...	.75
Dichloride, cl wks ....drs, E. Rockies dms, cl. ..lb.	...	.0842	...	.0842	...	.0742
Glycol, dms, cl. .....lb.	...	.15½	...	.15½	.14½	.18½
Fluorspar, 85.5% c-l, (*PC*) ton	25.00	28.00	25.00	28.00	28.00	34.00
Formaldehyde, c-l, bbls, wks (*FP*, *PC*) .....lb.	.055	.0575	.055	.0575	.055	.0575
Furfural drs, c-l. wks ....lb.	..	.12½	..	.12½	..	.12½
Fusel Oil, refd, dms, dlvd lb.	.18½	.19½	.18½	.19½	.18	.19½
Glauber's Salt, bgs, wks 100 lb.	1.05	1.25	1.05	1.25	1.05	1.28
Glycerin (*PC*) CP, drs, c-l, lb.	...	.18¾	...	.18¾	...	.18¼
Saponification, drs, c-l ..lb.	...	.12¾	...	.12¾	...	.12¾

GUMS

GumArabic, amber sorts bgs lb.	.17	.18	.17	.18	.14½	.24
Benzoin Sumatra, CS ....lb.	.60	.65	.60	.65	.45	.55
Copal, Congo, ...lb.	...	.56¼	...	.56¼	...	...
Copal, East India, ...lb.	...	.12	...	.12	...	...
Macassar pale bold ....lb.	...	.11¾	...	.11¾	...	...
Copal Manila, (A)	...	.15½	...	.15½	.14	.14½
Copal Pontianak, bold (A) lb.	.	.22⅜		.22⅛	.22⅛	.22⅜
Ester .....lb.	.09½	.12	.09½	.12	.08½	.10
Karaya, bbls, bxs, drs ...lb.	.14	.33	.14	.33	.14	.33

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

h Lowest price is for pulp; highest for high grade precipitated; *i* Crystals $6 per ton higher; USP, $15 higher in each case;

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Current Prices

Gums
Salt Cake

		Current Market	1943 Low	1943 High	1942 Low	1942 High
Kauri, N Y (A)						
Brown XXX, cases	lb.	...	.77	...	.77	.60	.77
B3	lb.	...	.22	...	.27½	.18½	.27½
Pale XXX	lb.	...	.65¾	...	.66	.61	.66
No 3	lb.	...	.22	...	.22	.17¾	.22
Sandarac, prime quality	lb.	...	.97½	...	.97½	.95	1.10
Tragacanth, No. 1, cases	lb.	4.00	4.25	4.00	4.25	3.50	4.00
No. 3	lb.	1.10	1.20	1.10	1.20	1.10	1.20
Yacca, bgs (*PC*)	lb.	.06	.07¼	.06	.07¼	.06	.07¼
Hydrogen Peroxide, cbys	lb.	.16	.18½	.16	.18½	.16	.18½
Iodine, Resublimed, jars	lb.	...	2.00	...	2.00	.	2.00
Lead Acetate, cryst, bbls	lb.	.	.12½	.	.12½	.12	.13¼
Arsenate, c-l	lb.	.11	.12	.11	.12	.11	.12
Nitrate, bbls	lb.	.	.12½	.	.12½	.11	.13
Red, dry, 95% Pb_3O_4, lcl	lb.	.09	.10¾	.09	.10¾	.09	.10¾
97% Pb_3O_4, bbls delv	lb.	.09¼	.11	.09¼	.11	.09¼	.09½
98% Pb_3O_4, bbls delv	lb.	.09½	.11¼	.09½	.11¼	.09½	.10½
White, bbls, lcl	lb.	.08¼	.08¾	.08¼	.08¾	...	.07½
Basic sulfate, bbls, lcl	lb.	.07¼	.08	.07¼	.08	.06½	.07½
Lime, Chem., wks, bulk	ton	6.25	13.00	6.25	13.00	7.00	13.00
Hydrated, f.o.b. wks	ton	8.50	16.00	8.50	16.00	8.50	16.00
Litharge, coml, delv, bbls	lb.	.08	.09¼	...	.08	.079	.08
Lithopone, ordi., (*PC*), bgs	lb.	.	.04¾	.	.04¾	...	.04¼
Magnesium Carb, tech, wks	lb.	.06¼	.09¾	.06¼	.09¾	...	.06¼
Chloride flake, bbls, wks c-l	ton		32.00		32.00		32.00
Manganese, Chloride, bbls	lb.	.14	nom.	.14	nom.	.13	.14
Dioxide, tech bgs, lcl	ton	70.00	73.00	...	74.75	70.00	74.75
Sulfate, tech, 90-95% drms,	ton	.11¼	.11½	.11¼	.11½	.10½	.11½
Methanol, pure, nat, drs cl *l*	gal.	.63	.76	.63	.76	.55½	.61½
Synth, pure, drs cl *m*	gal.	.34½	.40½	.34½	.40½	.34½	.40½
Methyl Acetate, tech tks	lb.	.06	.07	.06	.07	.06	.07
C.P. 97-99%, tks, delv	lb.	.09½	.10½	.09½	.10½	.09½	.10½
Chloride, 90 lb cyl	lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks, frt all'd	lb.	...	.08	...	.08	...	.08
Naphtha, Solvent, tks	gal.	...	.27	...	.27	...	.27
Naphthalene, crude, wks	lb.	2.75	3.00	2.75	3.00	2.50	3.00
Nickel Salt, bbls, NY	lb.	.13	.13½	.13	.13½	.13	.13½
Nitre Cake, blk	ton	...	16.00	...	16.00	...	16.00
Nitrobenzene, drs, wks	lb.	.08	.09	.08	.09	.08	.09
Orthoanisidine, bbls	lb.	...	.70	...	.70	...	.70
Orthochlorophenol, drs	lb.	...	.32	...	.32	...	.32
Orthodichlorobenzene, drms	lb.	.06	.08½	.06	.08½	.06	.07½
Orthonitrochlorobenzene, wks	lb.	.15	.18	.15	.16	.15	.18
Orthonitrotoluene, wks	lb.	...	.09	...	.09	...	.09
Para aldehyde, 99%, wks	lb.	...	.12	...	.12	...	.12
Chlorophenol, drs	lb.	...	.32	...	.32	...	.32
Dichlorobenzene, wks	lb.	.11	.15	.11	.15	.11	.12
Formaldehyde, drs, wks (*FP*)	lb.	.23	.24	.23	.24	.23	.24
Nitroaniline, wks	lb.	...	.45	...	.45	...	.45
Nitrochlorobenzene, wks	lb.	...	.15	...	.15	...	.15
Penetaerythritol, tech, del	lb.	.33½	.35½	.33½	.35½	.33½	.35½
Toluenesulfonamide, bbls	lb.	...	.70	...	.70	...	.70
Toluidine, bbls, wks	lb.	...	.48	...	.48	...	.48

PETROLEUM SOLVENTS AND DILUENTS

Lacquer diluents, tks, East Coast	gal.	...	.11	...	.11	...	.11
Naphtha, V.M.P., East tks, wks	gal.	...	.11	...	.11	.10½	.11
Petroleum thinner, 43-47, East, tks, wks	gal.	.08¾	.09½	.08¾	.09½	.08¾	.09½
Rubber Solvents, stand grd, East, tks, wks	gal.	...	.11	...	.11	.10½	.11
Stoddard Solvents, East, tks, wks	gal.	...	.09½	...	.09½	...	.09½
Phenol, drs (A)	lb.	.10½	.11¼	.10½	.11¼	.12½	.13
Phthalic Anhydride, bbls wks (A)	lb.	.14½	.15½	.14½	.15½	.14½	.15½
Potash, Caustic, wks, sol	lb.	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾
flake	lb.	.07	.07½	.07	.07½	...	.07
Potassium Bichromate csks *(*FP*)	lb.	.09⅝	.10	.09⅝	.10	...	.09⅝
Bisulfate, 100 lb kgs	lb.	.15½	.18	.15½	.18	.15½	.18
Carbonate, 83-85% calc	lb.	.05½	.05¾	.05½	.05¾	.06½	.06¾
liquid, tks	lb.	.	.0275	.	.0275	.	.0275
dms, wks	lb.	.03	.03⅛	.03	.03⅛	.03	.03⅛
Chlorate crys, kgs, wks (A)	lb.	.11	.13	.11	.13	nom.	.11
Chloride, crys, bgs, kgs	lb.	.08	nom.	.08	nom.	.08	nom.
Cyanide, drs, wks	lb.	...	.55	...	.55	...	.55
Iodide, bots., or cans	lb.	1.44	1.48	1.44	1.48	1.44	1.48
Muriate, bgs, dom, blk unit Per Unit K_2O	ton	.53½	.56	.53½	.56	.56	.58
Permanganate, USP, wks (*FP*) dms	lb.	.20½	.21	.20½	.21	.19¾	.21
Sulfate, 90% basis, bgs	ton	...	36.25	...	36.25	...	36.25
Propane, group3, tks (*PC*)	gal.	.03¼	.03¾	.03¼	.03¾	.02¾	.03¾
Pyridine, ref., drms	lb.	...	.46	...	.46	...	.46
R Salt, 250 lb bbls, wks	lb.	.	.55	.	.55	.	.55
Resorcinol, tech., drms, wks	lb.	.68	.75	.68	.75	.68	.74
Rochelle Salt, cryst	lb	.43½	.47	.43½	.47	...	.43½
Salt Cake, dom. blk wks	ton	...	15.00	...	15.00	...	15.00

l Producers of natural methanol divided into two groups and prices vary for these two divisions; *m* Country is divided in 4 zones, prices varying by zone.

* Spot price is ½c higher.

Current Prices

	Current Market		1943 Low	1943 High	1942 Low	1942 High
Saltpetre, grn, bbls ...100 lb.	8.20	8.60	8.20	8.60	...	8.20
Shellac, Bone dry, bbls ..lb. *r*	.42½	.46	.42½	.46	.39	.42½
Silver Nitrate, vials ....oz.	...	**.32⅜**	...	**.32⅜**	**.26⅞**	**.32⅜**
Soda Ash, 58% dense, bgs, c-l, wks ....100 lb.	...	**1.15**	...	**1.15**	...	**1.15**
58% light, bgs cl ...100 lb.	...	1.13	...	1.13	**1.05**	**1.13**
Caustic, 76% grnd drms .....100 lb.	...	**2.70**	...	**2.70**	...	**2.70**
76% solid, drms ..100 lb.	...	**2.30**	...	**2.30**	...	**2.30**
Liquid, sellers tks 100 lb.	...	1.95	...	1.95	...	2.00
Sodium Acetate, 60% tech, powd, flake, bbls, wks lb.	.05	.06	.05	.06	...	.05
Benzoate, USP bbls ....lb.	**.46**	**.52**	**.46**	**.50**	**.46**	**.50**
Bicarb, bbl, wks ....100 lb.	1.70	2.05	1.70	2.05	1.70	1.85
Bichromate, cks, wks (*FP*) lb.	...	.07¾	...	.07¾	...	**.07⅜**
Bisulfite, wks .....lb.	3.00	3.60	3.00	3.60	3.00	3.10
35-40% solbbls, wks 100 lb.	**1.40**	**1.65**	**1.35**	**1.80**	**1.35**	**1.80**
Chlorate, bgs, wks (A) ..lb.	...	**.06¼**	...	**.06¼**	...	**.06¼**
Cyanide, 96-98%, wks ..lb.	.14½	.15	.14½	.15	**.14**	**.15**
Fluoride, 95%, bbls, wks lb.	.07¼	.08¼	.07¼	.08¼	...	**.08**
Hyposulfite, bgs, wks 100 lb.	2.25	2.50	2.25	2.50	...	**2.45**
Metasilicate, bbls, wks .....100 lb.	2.50	3.55	**2.50**	**3.55**	**...**	**2.50**
Nitrate, imp, bgs (A) ton	...	33.00	...	33.00	...	29.35
Ntrite, bbls .....lb.		**.06¼**		**.06¼**	...	**.06¼**
Phosphate, di- wks ..100 lb.	6.00	7.25	6.00	7.25	...	...
cryst, bgs, c-l ....100 lb.	**2.55**	**2.70**	**2.55**	**2.70**	**2.55**	**2.70**
Tri-bgs, wks .....100 lb.	2.70	3.45	2.70	3.40	2.70	2.85
Prussiate, yel, bbls, wks lb.	.10	.11	.10	.11	...	.11
Pyrophosphate, bgs wks c-l lb.	.0528	.0610	.053	.061	**.053**	**.06**
Silicate, 52°, drs. wks 100 lb.	1.40	1.80	1.40	1.80	...	1.70
40°, drs, wks ....100 lb.	**.80**	**1.20**	**.80**	1.20	...	...
Silicofluoride, bbls NY ..lb.	.05	.05½	.05	.05½	.09	.15
Sulfate, Anhyd, bgs 100 lb.	**1.70**	**1.90**	**1.70**	**1.90**	**1.70**	**1.90**
Sulfide, c-l, bbls, wks ..lb.	...	**2.40**	...	2.40	...	2.40
Solid, bbls, c-l, wks ..lb.	**3.15**	3.90	3.15	3.90	...	3.15
Sulfite, powd, bbls, wks lb.	.05¼	.06	.05¼	.06	...	.05¼
Starch, Pearl, bgs ....100 lb.	...	3.47	...	3.47	...	3.10
Potato, bgs, cl .....lb.	...	**.0637**	...	**.0637**	**.061**	**.0637**
Rice, bgs .....lb.	.09½	.10¼	.09½	.10¼	.09	.10
Sweet Potato, bgs ..100 lb.	no stocks		no stocks		no stocks	
Sulfur, crude, f.o.b. mines ton	...	**16.00**	...	16.00	...	**16.00**
Flour, bgs, cl .....100 lb.	...	**1.65**	...	1.65	...	...
Flowers, USP, bgs .100 lb.	3.05	**3.55**	3.05	3.55	...	...
Roll, bbls .....100 lb.	2.40	2.90	2.40	2.90	2.40	2.70
Sulfur Dioxide, cyl .....lb.	**.07**	**.08**	**.07**	**.08**	**.07**	**.09**
tks, wks .....lb.	**.04**	**.06**	**.04**	**.06**	**.04**	**.06**
Sulfuryl Chloride .....lb.	**.15**	**.40**	.15	**.40**	.15	**.40**
Talc, crude, c-l, NY ....ton	...	13.00	...	13.00	12.50	24.50
Ref'd, c-l, NY .....ton	13.00	18.00	13.00	18.00	17.25	19.25
Tin, crystals, bbls, wks ..lb.	no stocks		no stocks		no stocks	
Metal, (*PC*) (A) .....lb.	...	**.52**	...	**.52**	...	**.52**
Titanium Dioxide (*PC*) ..lb.	.15	.15¾	.15	.15¾	...	.14½
Toluol, drs, wks (*FP*) (A) gal.	...	**.33**	...	**.33**	...	**.33**
tks, frt all'd (*FP*) ....gal.	...	.29½	...	.29½	...	.28
Tributyl Phosphate, dms lcl, frt all'd .....lb.	...	**.47**	...	**.47**	...	**.47**
Trichlorethylene, dms, wks lb.	(*FP*)	.09½	(*FP*)	.09½	...	.08
Tricresyl phosphate (*FP*) lb.	.24	.54½	.24	.54½	.25	.31
Triethylene glycol, dms lcl lb.	...	.26	...	.26	...	**.26**
Triphenyl Phos, drs (*FP*) lb.	**.31**	**.32**	**.31**	**.32**	**.31**	**.32**
Urea, pure, cases .....lb.		.12	...	.12	...	.12
Wax, Bayberry, bgs .....lb.	.25	.26	.25	.26	.18	**.20**
Bees, bleached, cakes ...lb.	...	.60	...	**.60**	**.58**	**.61**
Candelilla, bgs .....lb.	.38	.48	.38	.48	.33	.38
Carnauba, No. 1, yellow, bgs. .....lb.	.83¼	.93¼	.83¼	.93¼	.83¼	.89
Xylol, frt all'd, tks, wks..gal.	...	**.27**	...	**.27**	...	**.27**
Zinc Chloride fused, wks..lb.	.05	.0535	.05	.0535	...	.05
Metal, high grade slabs, c-l, NY (*FP*) (*PC*) 1000 lb.	...	**8.66**	...	**8.66**	...	**8.65**
Oxide, Amer, bgs, wks lb.	.07¼	.07½	.07¼	.07½	...	.07¼
Sulfate, crys, bgs, ..100 lb.	3.60	4.35	3.60	4.35	3.60	3.65

Oils and Fats

Babassu, tks, futures ....lb.	...	**.111**	...	**.111**	**no prices**	
Castor, No. 3, bbls .....lb.	.13¾	.14¼	.13¾	.14¼	.12½	.13¾
China Wood, drs, spot NY lb.	...	**.39**	...	**.39**	**.39**	**.40½**
Coconut, edible, drs NY ..lb.	...	.0985	...	.0985	...	...
Cod Newfoundland, dms..gal.	...	**.90**	...	.90	**.85**	.90
Corn, crude, tks, mills ...lb.	...	.12¾	...	.12¾	.12½	**.12¾**
Linseed, Raw, dms, c-l ...lb.	...	.1530	...	.1530	**.117**	**.143**
Menhaden, tks, Baltimore gal.	...	**.088**	...	**.089**	**.63¾**	**.666**
Light pressed, drs .....lb.	**.117**	**.119**	**.117**	**.119**	**.11**	**.139**
Oiticica, dms .....lb.	**.23**	**.25**	**.23**	**.25**	**.29**	**.25**
Oleo, No. 1, bbls, NY ...lb.	.13¾	nom.	nom.	.13¼	...	.13¼
Palm, Niger kernel, cks bulk .....lb.	...	**.0825**	...	**.0825**	**.0925**	...
Peanut, crude, tks, f.o.b.mill lb.	...	**.13**	...	**.13**	**.12¾**	**.13**
Perilla, crude dms, NY (A) lb.	...	**.245**	...	**.245**	...	**.246**
Rapeseed, denat, bulk .....lb.	...	.1150	...	.1150	...	...
Red, dms .....lb.	.13¼	.14¼	.13¼	.14¼	.11¾	.143
Soy Bean, crude, tks, mill lb.	...	**.1175**	...	**.1175**	**.12¼ nom.**	
Tallow, acidless, bbls .....lb.	...	.14¼	...	.14¼	...	...
Turkey Red, single, drs ..lb.	.10	.13½	.10	.13½	...	.08¾

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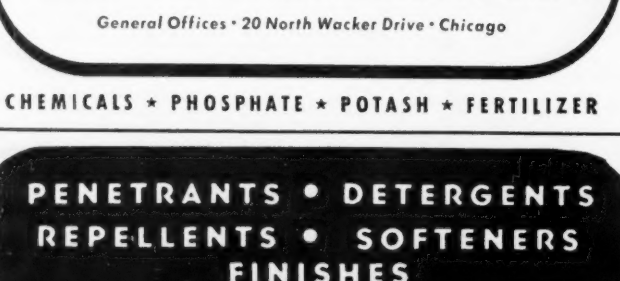

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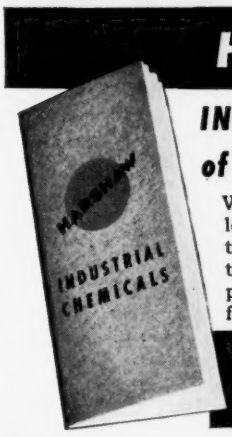

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"WE"-EDITORIALLY SPEAKING

Once again we must say, our loss is Uncle Sam's gain. Bill Hannum, our advertising manager, is now with the Army Air Corps. We are sorry to see him go but glad that he might have the chance to take a few whacks at the Axis from a closer range than some of us who must stay at home. The staff here, and we are sure, many of his friends in the industry wish him the best of luck.

There is something about this passage from Norman Angell's current book "Let the People Know" that strikes a responsive chord:

"There have been since the last world war scapegoats aplenty, turning attention from the real nature and cause of war, and the reasons for involvement in the present one. For a time the supreme scapegoat was the armament maker, the "merchant of death," those fifty evil men who for their base profits, compelled the supposedly helpless people of the world to go to war, in the face of all popular will to the contrary. During months Congress investigated their efforts to induce the country to arm itself more heavily. The final result of all the agitation is this: the very men who instituted it now insist that the merchants of death fell down shamefully and disastrously on their job. Senator Wheeler has declared upon several occasions since Pearl Harbor that his real indictment of the administration is that it took the country into war 'unprepared.' But 'unprepared' commonly means that it had not armament enough. Everyone now wishes that so far as the United States and Britain are concerned, the armament makers, the merchants of death, had succeeded a great deal better than in fact they did."

Remember the famous "Top Man in His Class" that peered out of the advertising pages of some of our best popular magazines about six years ago?

We like the approach of Paul Hoffman, chairman of the Committee for Economic Development, to this problem of post-war reconstruction. He places the emphasis where it should be—on a high level of production, with employment a byproduct rather than the main product. It is awfully easy to travel the down-hill path of the 25-hour week and make-work programs when the goal is employment alone.

Biochemists at the University of Illinois have proved that valine and methionine, two of the twenty or more amino acids that are regular constituents of proteins, are an essential part of the human diet. Now all that remains is for some chemical manufacturer to find out how to make them more cheaply than vegetables and other plants can, and for Chester Davis to assign them a point value.

We are deeply impressed every now and then when we come across figures of the National Safety Council, or other source, which show the enormous loss to the nation through accidents and injuries.

During 1942 deaths of 93,000 Americans, and injuries to 9,300,000 more were accountable to preventable accidents. The time lost to non-fatal injuries to workers, on and off the job, was equivalent to shutting down the aircraft and shipbuilding industries for 54 days.

Three important facts about accidents stand out: they are preventable, most of them happen off the job, and nearly all of them are the result of carelessness. Look for the hazards in your environment, especially in your home, so that your family will not be the one out of every four that may report an accident in 1943!

Well, it looks like industry is taking the lead from the movies and the circus. We see by the papers that the talent scouts in Hollywood had a heck of a time finding a midget for one of their pictures. It seems that they're all working for the aircraft industry where they are almost indispensable in certain phases of aircraft production. They can crawl into tight corners of fuselages and wings, where bigger guys would come a cropper.

So, if you need any midgets in your plant, you'd better see a booking agent today, as we hear that the little folk are being snapped up faster than "black market sirloins."

We recently ran across the following "Business Commandments." Are you a sinner or a believer?

1. Don't wait for the other fellow to come to you; go to him.
2. In competition with others, always give them the credit of being a little smarter than you are.
3. If you have no money and little credit, capitalize on your personality. Sometimes it pays to have nerve.
4. Never admit to anybody—and least of all to yourself—that you are licked.
5. Keep your business troubles to yourself. Nobody likes a calamity howler—besides, he finds scant favor with the bankers.
6. Don't be afraid of dreaming too big dreams. It won't hurt you to figure owning a railroad, even if you have to compromise on a flivver.
7. Make friends; but remember that the best friends wear out if you use them too frequently.
8. Be square even to the point of finickiness and you will have mighty little occasion to complain of a crooked world.
9. Take advice but do your own deciding.
10. Don't toady. The world respects a man who can stand on his own legs and look the world in the eye.—Smoke Rings.

Fifteen Years Ago

From Our Files of June, 1928

Phosgene explosion in plant in Germany, which killed and wounded several hundred, investigated to find out where the phosgene was made and why such a quantity was on hand. Doubt expressed as to rights of company to make phosgene in even the limited quantities required for industrial purposes, under the terms of the Versailles treaty.

du Pont begins manufacture of nitric acid by oxidation of ammonia at Mineral Springs, Ala., plant.

William H. Nichols, Jr., president General Chemical Co. and vice-president Allied Chemical & Dye Corp., dies at his home May 26 at age of 54. A five days' illness which developed into pneumonia caused his death.

Monsanto Chemical Works announces election of John W. Boyer, formerly sales manager of Mathieson Alkali Works, as vice-president in charge of sales succeeding Edgar M. Queeny. Mr. Queeny is now president having succeeded his father, John F. Queeny.

Arthur D. Little nominated for presidency of Society of Chemical Industry.

John P. Hubbell becomes partner in the firm of Singmaster & Breyer, chemical engineers and metallurgists,

Horace G. Carrell, general manager, Solvay Sales Corp., died of sudden heart attack on board S.S. "Jefferson" bound for Norfolk, Va.

William D. Harkins, professor of physical chemistry, University of Chicago, receives Willard Gibbs Medal for 1928 at meeting of Chicago section, A.C.S.

Henry Howard, Grasselli Chemical Co., re-elected president of Manufacturing Chemists Association at annual meeting in New York.

Part 2 — U. S. Chemical Patents

From Official Gazette—Vol. 548, Nos. 3, 4, 5—Vol. 549, Nos. 1, 2, 3, 4—Vol. 550, Nos. 1, 2—p. 414

Petroleum*

Compounded oil comprising hydrocarbon oil and salt of an organic substituted arsenic compound. No. 2,312,207. James O. Clayton and Bruce B. Farrington to Standard Oil Co. of Calif. (Corp. of Del.).

Process for acid treating petroleum oils. No. 2,312,112. Eddins W. McNealy to The Texas Co.

Color stabilizer for petroleum oils. No. 2,312,082. Melvin A. Dietrich to E. I. du Pont de Nemours & Company.

Refining gasoline. No. 2,312,020. Francis H. Bottomley to The Gray Process Corp.

Supplying heat for catalytic conversion of hydrocarbon oils. No. 2,312,006. Ernest W. Thiele to Standard Oil Co. (Corp. of Indiana).

Process for dehydrogenation of hydrocarbons. No. 2,311,979. Ben. B. Corson and Maurice W. Cox to Universal Oil Products Co.

Preventing haze formation in gasoline exposed to sunlight by adding sulfurized glyceride of a high molecular weight fatty acid. No. 2,311,929. Joseph A. Chenicek to Universal Oil Products Co.

Preventing haze formation in gasoline exposed to sunlight by adding sulfurized glyceride of a high molecular weight fatty acid. No. 2,311,929. Joseph A. Chenicek to Universal Oil Products Co.

Removing weakly acidic organic sulfur compounds from otherwise substantially neutral hydrocarbon fluids. No. 2,312,820. Lawrence Henderson and George Ayers, Jr. to The Pure Oil Co.

Process and agent for breaking petroleum emulsions. No. 2,312,735. Richard Salathiel to Standard Oil Development Co.

Process and agent for breaking petroleum emulsions. No. 2,312,734. Richard Salathiel to Standard Oil Development Co.

Breaking petroleum emulsions of the water-in-oil type. No. 2,312,733. Richard Salathiel to Standard Oil Development Co.

Demulsifying agent for petroleum emulsions of the water-in-oil type. No. 2,312,732. Richard Salathiel to Standard Oil Development Co.

Process and agent for breaking petroleum emulsions. No. 2,312,731. Richard Salathiel to Standard Oil Development Co.

Process of thermal cracking petroleum hydrocarbons. No. 2,312,719. Paul Kuhl to Standard Oil Development Co.

Cracking hydrocarbons for gasoline. No. 2,312,681. John Teter to Sinclair Refining Co.

Process for treating hydrocarbons containing olefins. No. 2,312,560. Karl Korpi to Union Oil Company of California.

Producing normally liquid hydrocarbons in the motor fuel boiling range from lighter hydrocarbons. No. 2,312,539. Frederick Frey to Phillips Petroleum Co.

Conversion of hydrocarbon mixture of wide boiling range into hydrocarbons boiling within the usual motor fuel range. No. 2,312,445. Robert Ruthruff.

Improved hydrocarbon motor fuel. No. 2,312,360. Thomas Risk, Lawrence Henderson and Sustin Wilder to The Pure Oil Co.

Aviation fuel. No. 2,311,498. Alexis Voorhies, Jr. to Standard Catalytic Co.

Method of treating hydrocarbons. No. 2,311,593. Vladimir Kalichevsky, Eugene Scafe and Kenneth Hayden to Socony-Vacuum Oil Co., Inc.

Refining of mineral oils. No. 2,311,562. Harold Moyer to Standard Oil Development Co.

Treating hydrocarbon fluids. No. 2,311,421. John T. Ward to Gasoline Products Co. Inc.

Method and apparatus for handling asphalt. No. 2,311,389. Robert C. Hawks and Emory M. Skinner to Socony-Vacuum Oil Co.

Process extracting constituents of hydrocarbon liquids. No. 2,311,372. Eddie M. Dons and Oswald G. Mauro to Mid-Continent Petroleum Corp.

Refining light hydrocarbon distillates. No. 2,311,328. Paul V. Brower and Lowrey Love to Shell Development Co.

Process for cracking oils. No. 2,311,318. Charles W. Tyson, Eger V. Murphree and Herbert G. M. Fischer to Standard Oil Development Co.

Manufacture of motor fuel. No. 2,311,096. Lynn R. Strawn to The Texas Co.

Conversion of hydrocarbon oils. No. 2,310,922. Joseph Barron to The Texas Co.

Resins and Plastics*

Preparing a resin solution suitable for use as a lacquer. No. 2,313,678. John Simons to Plaskon Co., Inc.

Resin and its preparation. No. 2,313,565. Wendell McDowell and William Kenyon to Eastman Kodak Co.

Coating tough hard insoluble resinous base by applying oil-free phenol formaldehyde resin coating thereto, and heating coating to transform it to the insoluble infusible stage. No. 2,312,296. Charles H. Hempel to Heresite & Chemical Co.

Synthetic resin and process of producing. No. 2,311,781. Paul H. Scrutchfield to Hercules Powder Co.

Condensation derivatives of rubber. No. 2,311,770. Thomas C. Morris to Wingfoot Corp.

Polyvinyl acetal resin plasticized with mixture of phenyl ethyl alcohol and an alkyl ester of lauric acid. No. 2,312,963. Elmer Derby to Monsanto Chemical Co.

Colorless, thermoplastic, balsam-like to solid resins. No. 2,312,863. Herbert Bestian to General Aniline & Film Corp.

Resinous product from cellulosic substances. No. 2,312,807. Eduard Farber to Polyxor Chemical Co., Inc.

Flexible transparent article in sheet form comprising essentially polyvinyl acetal resin capable of use as a tracing medium. No. 2,312,623. John Brooks and Elmer Derby to Monsanto Chemical Co.

Plastic material comprising vegetable glue, an inorganic oxide gel material in the form of paste and a cellulose ether. No. 2,312,446. Friedrich Schoenbeck and Erich Czapp.

Plastic masses comprising polyvinyl compounds and ethers of low volatility. No. 2,312,437. Hans Orth.

Resinous product of aldehydes and guanazo diazines. No. 2,312,320. Gaetano D'Alelio and James Underwood to General Electric Co.

Iridescent plastic composition. No. 2,311,433. Irving Gertzog and Louis Gertzog to Rochester Button Company.

Treatment of rosin. No. 2,311,511. Laszlo Auer.

Rosin treatment method. No. 2,311,510. Laszlo Auer.

Rosin treatment. No. 2,311,509. Laszlo Auer.

Process for treating rosin. No. 2,311,508. Laszlo Auer.

Plasticizing amino-formaldehyde resins. No. 2,311,341. Wm. B. Johnston to American Cyanamid Co.

Plastic comprising reaction products of alkaline polysulfides and olefin compounds containing group C_nH_{2n} combined with sulfur dichlorhydrin plastic, "neoprene," ozokerite and sulfur in proportions of about 200 parts by weight of said reaction products, 25 to 100 parts sulfur dichlorhydrin plastic, 25 to 100 parts "neoprene" 1 to 8 parts ozokerite and 10 to 300 parts sulfur. No. 2,311,284. Chester Snyder to Liatex Corp.

Plastic composition comprising vinyl resin and plasticizer said plasticizer being di(2-ethylhexyl) methyl hexahydrophthalate. No. 2,311,259. Charles E. Staff and William N. Stoops to Carbide & Carbon Chemicals Corp.

Composition of mixtures of vinyl and acrylate resins. No. 2,311,249. George M. Powell to Carbide & Carbon Chemicals Corp.

Molding synthetic resins. No. 2,311,233. Johannes Jaenicke, Hermann Miedel and Otto Schweitzer to American Lurgi Corp.

Manufacture of modified rosin. No. 2,311,200. Laszlo Auer.

Resinous composition. No. 2,310,935. Richard Carlton and Byron Oakes to Minnesota Mining & Mfg. Co.

Rubber*

Rubber tube having a smooth, glassy inner surface having absorbed therein zinc stearate during curing. No. 2,313,703. Ezra Hanna to Davol Rubber Co.

Reclaiming neoprene. No. 2,313,693. Herbert Winkelmann to Dryden Rubber Co.

Arresting the gelling properties of latex foam sensitized with alkali silicofluoride and zinc oxide. No. 2,313,464. William Clayton to United States Rubber Co.

Recovering a stable liquid composition from ungelled latex foam containing zinc oxide and alkali silicofluoride. No. 2,313,463. William Clayton and Walter Hoover to United States Rubber Co.

Preparation of rubber compositions. No. 2,313,154. John Kelly, Jr. and Milton Stern to Dryden Rubber Co.

Unmelted, soluble, solid, masticated homogeneous heat reaction product of unvulcanized rubber formed by heating in vacuum a relatively thin sheet of a mixture of unvulcanized rubber, a salt of a strong acid, a weak acid, and less than 3% sulfur. No. 2,311,656. Thomas R. Griffith to Honorary Advisory Council for Scientific and Industrial Research.

Imparting tack to unvulcanized synthetic rubber prepared by copolymerizing a butadiene-1,3 hydrocarbon and an alpha-methylene nitrile. No. 2,312,362. Donald Sarbach to The B. F. Goodrich Co.

Method of depositing rubber and composition employed therein. No. 2,311,488. Robert Thomas to American Anode Inc.

Latex composition containing milk and material from group consisting of ammonium and alkali-metal oxalate. No. 2,311,136. Robert R. Sterrett to U. S. Rubber Co.

Process for milling rubber. No. 2,311,112. Charles A. Klebsattel to The Martin Dennis Co.

Process of manufacturing gas expanded rubber. No. 2,310,926. Roger Bascom to Rubatex Products, Inc.

Textile*

Improving affinity of cellulosic textile material for those dyestuffs used for dyeing wool. No. 2,312,199. Ernest E. Tallis and Wilfred J. Charles to Courtaulds, Ltd.

Manufacturing rayon yarn, characterized by high tensile strength, toughness and elasticity. No. 2,312,152. Isaac P. Davis to American Viscose Corp.

Pattern effects on cellulose acetate or other organic derivative of cellulose textile materials—dyed with amino anthraquinones, by locally applying sulfoxylate discharging agent. No. 2,316,277. Celanese Corp. of America.

Sized synthetic linear polyamide yarn. No. 2,312,469. Henry Freund to E. I. du Pont de Nemours & Co.

Pre-shrinking and finishing cellulosic textile fabric. No. 2,312,348. Warren Magill to Sears, Roebuck and Co.

Producing fast dyed patterned parchementized cellulosic fabrics. No. 2,312,346. Fritz Lorenz and Ernst Weiss to Heberlein Patent Corp.

Process reacting textile material with formaldehyde. No. 2,311,080. Paul S. Pinkney to E. I. duPont de Nemours & Co.

Textile treatment. No. 2,311,027. William Burke, Robert Maxwell and Paul Pinkney to E. I. du Pont de Nemours & Co.

Apparatus for preparing stiffened fabrics. No. 2,311,013. William Whitehead to Celanese Corporation of America.

Method of preparing stiffened fabrics. No. 2,311,012. William Whitehead to Celanese Corporation of America.

Agricultural Chemicals

Processing residue of solvent extraction of cotton seed meal. No. 2,316,014. Harold S. Olcott to Cotton Research Foundation.

Composition of matter for regulating or controlling the growth of plants. No. 2,314,091. Franklin Jones to American Chemical Paint Co.

Protecting a plant during transplantation by coating with hygroscopic material. No. 2,314,928. Albert Fischer.

* *Continued from last month (Vol. 547, Nos. 3, 4—Vol. 548, Nos. 1, 2.)*

Color-stable molasses. No. 2,315,626. Charles J. Krister to E. I. du Pont de Nemours & Co.

Method of canning green vegetables. No. 318,426. Walter Schroder and Thomas Rogers.

Producing plant stimulant, plant nutrients, and an increased count within a humous material. No. 2,317,991. Ernst Grether to The Dow Chemical Co.

Producing plant stimulant plant nutrients, and an increased bacterial count within a humous material. No. 2,317,990. Ernest Grether, The Dow Chemical Co.

Treating proteinic material, to produce a plant stimulant, plant nutrients and increase in the bacterial count. No. 2,317,992. Ernest Grether to The Dow Chemical Co.

Process for treating tobacco. No. 2,317,792. Johannes Moser.

Modified Starch. No. 2,317,752. Arthur Fuller to National Starch Products Inc.

Heating a concentrated corn starch conversion syrup to a temperature of from about 200 to 300° F. No. 2,317,479. David Peebles and Paul Manning to Golden State Co., Ltd.

Processing soya beans by soaking soya beans in water containing sodium chloride and flavoring-coloring agent, and frying the beans in hot oil until the residual moisture of the beans is about 2% or 3%. No. 316,458. Oreste Scalise.

Wet starch manufacturing process in which starch bearing material is treated by milling operations to form a mill starch stream containing fine slop. No. 2,316,807. Albert Peltzer.

Agricultural parasiticide. No. 2,316,962. George E. Lynn, Fred W. Fletcher and Gerald H. Coleman to The Dow Chemical Company.

Treatment of wheat prior to milling to cure a form of damage to the baking character of wheat due to the attack of "wheat bug." No. 2,318,999. Charles Jones and Arthur Simpson to The Research Association of British Flour Millers.

Preservation of comestibles. No. 2,318,867. Felix Kiefer.

Preparation of acid vegetable juices. No. 2,318,810. John G. Souther to The Schwarz Engineering Co., Inc.

Plant treatment composition. No. 2,318,733. George S. Avery, Jr. to The Dow Chemical Co.

Method of preserving corn on the cob, which consists in cutting the corn so that it presents a stem extending from the ear and maintaining a fibrous material moistened with a saccharine solution in contact with the end of the stem. No. 2,318,713. Andrew Y. Preble.

Cellulose

Treatment of cellulosic materials. No. 2,316,037. Clifford C. Wilcock and Charles Percival Tattersfield to Courtaulds Ltd.

Preparing cellulose for esterification. No. 2,315,973. Carl J. Malm to Eastman Kodak Co.

Acetylating cellulosic material. No. 2,315,203. Rudolf Hoffmann and Wilhelm Simson.

Protecting cellulosic material from deterioration. No. 2,315,064. Edwin Littmann to Standard Oil Development Co.

Production of fibrous fatty acid esters of cellulose from cellulose. No. 2,317,767. Rudolf Hofman and Wilhelm Rohm.

Improving materials containing cellulose. No. 2,317,756. Charles Graenacher and Richard Sallmann to Society of Chemical Industry in Basle.

Esterifying cellulose in the presence of a boron trifluoride complex. No. 2,316,525. Ambrose McAlevy to E. I. du Pont de Nemours & Co.

Preparing shaped objects of cellulose derivatives with decreased fusibility and solubility in organic solvents. No. 2,317,131. Rollin F. Conaway to E. I. du Pont de Nemours & Co.

Ceramics

Glass article composed throughout of a borosilicate glass containing a substantial amount of an oxide of an easily reducible metal. No. 2,314,804. Herbert Wilson to Corning Glass Works.

Unvitrified ceramic body of magnesia silica and alumina. No. 2,314,107. Lawrence Shardlow to Radio Corporation of America.

Crystalline ceramic material consisting essentially of talc, clay and magnesium oxide. No. 2,313,842. Merle Rigtarink to Bell Telephone Laboratories, Inc.

Forming dense, non-porous magnesia ceramics. No. 2,313,746. John Heany to Heany Industrial Ceramic Corp.

Making composite glass articles. No. 2,315,329. Harrison Hood and Martin Nordberg to Corning Glass Works.

Uniform skeleton structure of glass having a multiplicity of interconnecting submicroscopic pores extending throughout the mass. No. 2,315,328. Harrison Hood and Martin Nordberg to Corning Glass Works.

Treating zirconium oxide to render it suitable for use as an opacifier for vitreous enamels. No. 2,315,519. Donald S. Hake and Harold D. Prior to The Titanium Alloy Mfg. Co.

Ceramic stenciling ink and vehicle therefor. No. 2,318,124. Frederick Shurley to Guthrie Ceramic Labeling & Machinery Co. Inc.

Manufacturing mirrors which includes the deposition of metallic silver from a solution of a silver salt and a reducing agent. No. 2,317,877. Elmer Ballintine to Pittsburgh Plate Glass Co.

Manufacturing mirrors having one silvered surface and one unsilvered surface. No. 2,317,876. Elmer Ballintine to Pittsburgh Plate Glass Co.

Semi-porcelain once fired grog sanitary ware. No. 2,317,855. Leonard Hepner and Roland Tucker to Crane Co.

Low-melting glaze composition, suitable for use as an overglaze. No. 2,316,742. Alden J. Deyrup to E. I. du Pont de Nemours & Co.

Preparing an artificial glass. No. 2,318,959. Irving Muskat, Maxwell Pollack and Franklin Strain, and William Franta to Pittsburgh Plate Glass Co.

Process of producing ceramic articles which comprise the step of incorporating a hydrous zeolite gel with ceramic raw materials. No. 2,318,753. Willard K. Carter to National Aluminate Corp.

Chemical Specialty

Lubricant containing a small amount of a phosphorus sulfide-resin-like oil reaction product. No. 2,316,091. Claron N. White to Standard Oil Co. (Corp. of Ind.)

Lubricant composition containing an oil and a small amount of the neutralized phosphorus and sulfur-containing reaction product of a phosphorus sulfide and an olefin. No. 2,316,090. Charles D. Kalso and Lawson W. Mixon to Standard Oil Co. (Corp. of Ind.)

Lubricant containing hydrocarbon oil and a neutralized phosphorus and sulfur-containing reaction product of a phosphorus sulfide and an olefin hydrocarbon. No. 2,316,088. Clarence M. Loane and James W. Gaynor to Standard Oil Co. (Corp. of Ind.)

Lubricant containing a lubricating oil and the phosphorus and sulfur-containing product obtained by reacting a hydrocarbon with a sulfurizing agent and a phosphorus sulfide. No. 2,315,087. James W. Gaynor and Charles M. Loane to Standard Oil Co. (Corp. of Ind.)

Mineral oil composition comprising a viscous mineral oil and phosphorus and sulfur-containing reaction product of a phosphorus sulfide. No. 2,316,086. Frederick H. MacLaren to Standard Oil Company. (Corp. of Ind.)

Lubricant comprising a lubricating oil and the phosphorus and sulfur-containing reaction product of a phosphorus sulfide and a high molecular weight organic compounds. No. 2,316,085. Charles D. Kelso and Lawson W. Mixon to Standard Oil Co. (Corp. of Ind.)

Lubricant composition comprising a mineral oil and the product obtained by reacting a phosphorus sulfide and an olefin polymer. No. 2,316,084. Clarence M. Loane, James W. Gaynor and Lawson W. Mixon to Standard Oil Co.

Lubricant comprising a hydrocarbon lubricating oil and the product obtained by reacting a phosphorus sulfide with a hydrocarbon. No. 2,316,083. Clarence M. Loane and James W. Gaynor and Lawson W. Mixon to Standard Oil Co. (Corp. of Ind.)

Lubricant comprising a mineral lubricating oil and a neutralized phosphorus and sulfur containing reaction product of a phosphorus sulfide and a hydrocarbon. No. 2,316,082. Clarence M. Loane and James W. Gaynor to Standard Oil Co. (Corp. of Ind.)

Lubricant comprising a mineral lubricating oil and a neutralized phosphorus and sulfur-containing reaction product of a phosphorus sulfide and an aromatic hydrocarbon. No. 2,316,081. Clarence M. Loane and James W. Gaynor to Standard Oil Co. (Corp. of Ind.)

Lubricant comprising a lubricating oil and a phosphorus and sulfur-containing phosphorus sulfide-olefin polymer reaction product. No. 2,316,080. Clarence M. Loane and James W. Gaynor to Standard Oil Co. (Corp. of Ind.)

Lubricant comprising a mineral oil and a small amount of an isobutylene polymer with an alkali metal hydroxide dispersed therein. No. 2,316,079. Clarence M. Loane and James W. Gaynor to Standard Oil Co. (Corp. of Ind.)

Lubricant comprising a hydrocarbon oil and the phosphorus and sulfur-containing, chlorine-free reaction product of a phosphorus sulfide and a polymer. No. 2,316,078. Clarence M. Loane and James W. Gaynor to Standard Oil Company (Corp. of Ind.)

Cement composition. No. 2,316,039. Howard R. Wilson to E. I. du Pont de Nemours & Co.

Motor fuel composition comprising mostly hydrocarbons adapted as a fuel for spark-ignition engines. No. 2,316,012. Pharis Miller to Standard Oil Development Co.

Compression-ignition engine fuel comprising a hydrocarbon oil boiling above the gasoline range and 0.2 to 3% of a thiazole. No. 2,316,011. Pharis Miller and Gould H. Cloud to Standard Oil Development Co.

Addition agent for enhancement of the properties of drilling muds. No. 2,315,995. Milton Williams to Standard Oil Development Co.

Insecticide comprising as active insecticidal ingredient a dihydroanthracene. No. 2,315,965. William A. Knapp to General Chemical Co.

Stabilized flavoring material containing an aromatic, flavoring and coloring principle of natural fruit origin, and an organic oxidation inhibitor. No. 2,315,858. William Redmond, William E. Stokes, Margaret H. Kennedy and Charles N. Frey to Standard Brands Inc.

Detergent composition comprising 0.5 to 3 parts of the condensation product of an aliphatic monocarboxylic acid, 5 to 10 parts of the sulfosuccinic ester of at least one aliphatic alcohol and 10 to 50 parts of a water-soluble salt of pyrophosphoric acid. No. 2,314,840. Coleman Caryl to American Cyanamid Co.

Paper of enhanced wet strength and wet-rub properties, whose fibres are thoroughly impregnated with a water-proof mixture. No. 2,314,820. Sumner Fairbanks to The Hamersley Mfg. Co.

Improved lubricity-increasing agent for use in lubricating oils. No. 2,314,769. Arthur Burwell to Alox Corp.

Antiwelding lubricant preparation. No. 2,314,530. William Tighe to The Standard Oil Co.

Emulsifying composition comprising 84% of mineral lubricating oil, 3% of mixture of sodium tri and tetra isobutyl phenol sulfonate, 1% of diethylene glycol and 11% of sodium salts of oils-soluble sulfonates. No. 2,314,450. John Holtzclaw and George Serniuk to Standard Oil Development Co.

Pressure impregnating wood with hexachloro-cyclohexadiene-1,4-one-3 as an active toxicant dissolved in an organic solvent for termite control. No. 2,314,362. Lindley Mills to The Dow Chemical Co.

Urea-aldehyde adhesive composition. No. 2,314,308. Carleton Ellis, Carleton Ellis, Jr. to Ellis Laboratories, Inc.

Quick-setting printing ink, characterized by being solid at atmospheric temperature and molten when warm, which consists essentially of the thermoplastic reaction product of a phenol and sulfur chloride. No. 2,314,307. Carleton Ellis, Carleton Ellis, Jr. to Ellis Laboratories, Inc.

Cleansing and simultaneously partially dehydrating oily wood preservatives composed of coal-tar creosote. No. 2,314,257. Joseph Vaughan and Joseph Vinson to Southern Wood Preserving Co.

Cleaning and dehydrating a wood preservative consisting of coal-tar creosote. No. 2,314,256. Joseph Vaughan to Southern Wood Preserving Co.

Preparation of emulsion for waterproofing and fireproofing purposes. No. 2,314,242. Rotheus Porter, Jr. to Herbert B. Morse.

Liquid waterproofing composition. No. 2,314,135. Constantine Fabian and James Lee to Lee Bros. Hats, Inc.

Pharmaceutical composition comprising aqueous alcoholic solution of a cadmium salt and a wetting agent, said composition having fungicidal, fungistatic, and deodorizing properties. No. 2,314,125. Arthur Coca to Lederle Laboratories, Inc.

Parasiticidal composition amine salts of phenols. No. 2,313,988. Edgar Britton and Gerald Coleman to The Dow Chemical Co.

Liquid rosin flux composition for soldering. No. 2,313,736. Francis Dashner to American Can Co.

Leak sealing composition. No. 2,315,321. John Evans and Walter Hall to E. I. du Pont de Nemours & Co.

Water-repellent surfacing for cement. No. 2,315,029. Robert Wetton to Keasbey & Mattison Co.

Mopping composition in dry form comprising approximately 50% powdered arsenical poison and approximately 40% to 50% powdered bentonite. No. 2,315,718. William J. Lippfert to Woolfolk Chemical Works, Ltd.

Plaster of Paris bandage comprising Plaster of Paris and a protein bonding agent of the prolamin group. No. 2,315,484. George E. Hardy to Johnson & Johnson.

Insulating shape formed by burning a molded foamed mixture of ceramic refractory material, a quick-setting cementitious material, sawdust, an alkyl sulfuric acid ester foaming agent. No. 2,318,574. Isaac Harter, Charles Norton, and Charles Norton, Jr. to The Babcock & Wilcox Co.

Manufacture of a cleansing agent composed of silica particles coated with an autogenous layer of alkali metal silicates. No. 2,318,555. Robert Ruthruff.

Abrasive, consisting of alumina having intergranularly dispersed therein monazite. No. 2,318,360. Raymond Benner and Henry Baumann, Jr. to The Carborundum Co.

Embalming fluid. No. 2,318,319. Louis McDonald to The Dodge Chemical Co.

Antistatic agent, and its application. No. 2,318,296. Joseph Dickey, to Eastman Kodak Co.

Drilling mud, for use in drilling oil and gas wells. No. 2,318,284. Robert Booth, to American Cyanamid Co.

Moth-proofing agent, comprising isonitrosocetanilide. No. 2,318,201. Wallace Colman and Herbert Haller.

Latex adhesive. No. 2,318,126. Louis Spraragen, to Angier Products Inc.

Water-proof binding agent, comprising melamine-formaldehyde condensation product, starch and an ammonium salt. No. 2,318,121. Gustiv Widmer and Willi Fisch to Ciba Products Corporation.

Manufacturing a transfer sheet. No. 2,318,096. Frederick Quick to All Purpose Gold Corporation.

Fluid composition, consisting of a mixture of dimethyl phthalate and dimethoxy tetraglycol. No. 2,318,079. Leon Jehle to Carbide and Carbon Chemicals Corporation.

Petroleum demulsifying composition. No. 2,318,035. Truman Wayne.

Emulsion breaking compound. No. 2,318,034. Truman Wayne.

Lubricating composition. No. 2,318,013. Carl Trutton and Albert Smith to The Lubri-Zol Development Corporation.

Varnish Oil. No. 2,318,009. Izador Novak to Raybestos-Manhattan.

Bituminous composition characterized by thoroughness of contact and lasting adherence to stony aggregate. No. 2,317,959. James Johnson and Earl Brown to Nostrip, Inc.

Emulsifying cheese. No. 2,317,958. James Ingle to Industrial Patents Corp.

Deodorant composition comprising natural marl and lime. No. 2,317,908. Roy Grady.

Waterproof adhesive composition. No. 2,317,891. Brook Dennison to Pittsburgh Plate Glass Co.

Reproduction paper comprising a backing and a heat sensitive coating. No. 2,317,789. Robert Marriott to Finch Telecommunications, Inc.

Manufacture of permeable materials suitable for use as sausage casings. No. 2,317,779. Owschia Janser to Mark Brainos.

Fungicidal composition having as an active ingredient a salt of an alkylene bisdithiocarbamic acid. No. 2,317,765. William Hester to Rohm & Haas Co.

Lubricating oil. No. 2,317,751. Per Frolich and Anthony Gleason to Standard Oil Development Co.

Insecticidal material. No. 2,317,741. Clarence Dolman to Hercules Glue Co.

Breaking agent for emulsions from crude petroleum and salt water and a breakage of said emulsions. No. 2,317,726. Karl Broedeker and Karl Winnacker.

Imparting greaseproof characteristics to paper. No. 2,317,696. Edward Rich.

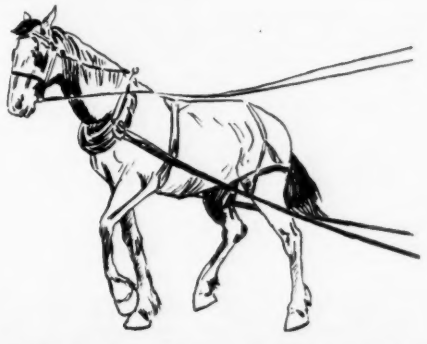
Lubricating composition consisting essentially of a lubricating oil and an oil-soluble mixture of a plurality of different thio-alkyl compounds. No. 2,317,666. Arthur Burwell and James Camelford to Alox Corp.

Synthetic drying oil composition and method of producing same. No. 2,317,663. Clyve Allen and Vernon Haury to Shell Development Co.

Coated abrasive. No. 2,317,650. Herbert Stratford to The Stratmore Co.

You can *substitute* the Old Grey Mare for your motor transportation

You can *substitute* various containers for wood boxes and metal drums



BUT

PRODUCERS OF MORE THAN 300 POWDERED CHEMICALS WILL TELL YOU THAT *RAYMOND Multi-Wall PAPER SHIPPING BAGS*

ARE MORE THAN SUBSTITUTES

These tough, strong, CUSTOM BUILT Shipping Bags have been doing a real job in the chemical packing field for years. And now, with metal and wood gone to war, they're winning a permanent home for themselves among producers who have never used paper bags before. You don't have to use a poor substitute for your present packing and shipping of granulated, crushed or powdered chemicals . . . simply turn to RAYMOND BAGS. Yes, you can switch to paper bags quickly and economically even if you have not used them in the past. A Raymond representative will tell you how. Raymond Bags are available for civilian and wartime needs.

THE RAYMOND BAG COMPANY, Middletown, Ohio

They're **SIFT - PROOF! DUST - PROOF! WATER - RESISTANT!**

Composition for preserving cut flowers. No. 2,317,631. August Meyer.

Penetrant composition for quickly wetting and loosening wallpaper. No. 2,317,505. Helen Wassell to Carbide and Carbon Chemicals Corp.

Production of alkali-resistant alginic materials in a thin extended form. No. 2,317,492. John Speakman and Norman Chamberlain to Cefoil Ltd.

Flavoring frozen foodstuffs. No. 2,317,397. Harry Noyes.

Double-activation process of making superior hard fiber board. No. 2,317,394. William Mason, Robert Boehm, and George Simpson to Masonite Corp.

Setting printing ink comprising applying alkaline silicate solution in finely divided form. No. 2,317,370. Charles Geese.

Liquid oily castor oil product having drying properties and containing chemically combined boron. No. 2,317,361. Ivor Colbeth to The Baker Castor Oil Co.

Softeners for textile, leather, plastic and paper products. No. 2,316,258. Paul Kummel vested in Alien Property Custodian.

Plasticized cellulose derivative composition. No. 2,316,242. Winfrid Hentrich, Wilhelm Kaiser and Rudolf Endresto Patchem A. G. Zur Beteiligung an Patenten und Sonstigen Erfindungsrechten auf Chemische Verfahren.

Preparation of beer, the step which comprises bringing an alkalized silica gel in contact with the beer during its preparation. No. 2,316,241. Eberhard Heimann vested in Alien Property Custodian.

Making chromite-magnesia brick having unprecedented spalling resistance great slag resistance and strength at high temperatures, and fair strength at atmospheric temperatures. No. 2,316,228. Konrad Erdmann to Alien Property Custodian.

Making chromite-magnesia bricks having great spalling resistance, slag resistance and strength at high temperatures, and fair strength at atmospheric temperature. No. 2,316,229. Josef Berick vested in Alien Property Custodian.

Dry water-soluble aluminum-surface cleanser for use in aqueous solution. No. 2,316,220. Robert H. Brown and Robert B. Mears to Aluminum Co. of America.

Dry water-soluble aluminum-surface cleanser for use in aqueous solution. No. 2,316,219. Robert H. Brown and Robert B. Mears to Aluminum Co. of America.

Detergent composition adapted for use as a shampoo. No. 2,316,194. Gilbert C. Toone and Lawrence H. Fleet to Allied Chemical & Dye Corp.

Lubricating composition comprising oleaginous material oils and a thickening agent consisting essentially of a lithium soap of a higher fatty acid. No. 22,299. Clarence E. Earle.

Production of lubricating oil containing wax. No. 2,316,395. Ulric B. Bray and Claude E. Swift to Union Oil Co. of Calif.

Flash powder comprising a thoroughly ball milled mixture of sodium nitrate and magnesium powder. No. 2,316,358. Clifford A. Nickle to General Electric Co.

Steam cylinder oil. No. 2,316,347. Frederick H. MacLaren to Standard Oil Co.

Composite article comprising a metallic core and a thick ectrodeposited nickelous protective layer. No. 2,316,303. Andrew Wesley and Jay W. Carey to The International Nickel Co., Inc.

Dielectric composition comprising a naphthenic base mineral oil and dissolved therein a refined rosin. No. 2,316,299. Archibald W. Thompson.

Process of making bars and cakes of soap which comprises mixing soap with borax. No. 2,316,689. Robert F. Heald and Albert L. Schulerud to Colgate-Palmolive Peet Co.

Printing ink consisting of 1000 parts of a 50% aqueous emulsion of polyvinyl acetate of which about 5% has been saponified, a plasticizer and a basic dyestuff. No. 2,316,629. Hilger P. Schmitz vested in the Alien Property Custodian.

Fire extinguishing system. No. 2,316,789. Henry E. Heigis and Archie Towart, Jr. to Specialties Development Corp.

Self-lubricating metallic packing comprising flakes of salt metal and particles of lubricating material consisting of graphite and soapstone. No. 2,316,778. John J. Fiechter.

Gum and carbon deposit solvent. No. 2,316,754. Wiliam J. Backoff and Norman D. Williams to The Pure Oil Company.

Lacquer coated wooden forms for concrete. No. 2,316,752. Clarence L. Atkinson and George R. Maher to E. I. du Pont de Nemours & Co.

Ceramic paint composition comprising a vitrifiable enamel composition suspended in a vehicle containing methyl cellulose. No. 2,316,745. Campbell Robertson and Alden J. Deyrup to E. I. du Pont de Nemours & Co.

Dry cleaning and degreasing composition. No. 2,317,112. Wilbur B. Pings to E. I. du Pont de Nemours & Co.

Making a water resistant porous insulating product. No. 2,316,998. Nathaniel L. Smith to Process Holdings Co.

Mastic composition and method of preparing. No. 2,316,964. Paul V. McKinney and Milo Glenn to The Pure Oil Company.

Halogenated aliphatic lubricant additive. No. 2,316,925. William A. Whittier and Joseph B. Stucker to The Pure Oil Co.

Cork composition including an aldehyde insolubilized binder which liberates free aldehyde. No. 2,317,328. Paul W. Kinney to Armstrong Cork Co.

Shoe bottom filling material. No. 2,317,326. George E. Ehle to Armstrong Cork Co.

Dentifrice. No. 2,317,297. Allen L. Omohundro and Emil C. Fanto to McKesson & Robbins Inc.

Luminous plastic writing stick, composed of Japan wax, ozokerite, paraffin, petroleum jelly and a small amount of luminous sulfide. No. 2,317,159. Maurice A. Weil to Rhode Island Laboratories, Inc.

Processing cheese the steps which comprise adding to and incorporating in cheese a small quantity of a substance selected from the group consisting of ammonium metaphosphate, diammonium disodium pyrophosphate, and mixtures of these salts, and pasteurizing the mass. No. 2,319,187. James Ingle to Industrial Patents Corp.

Food product comprising a dried mixture of normal skimmed milk and skimmed milk which has been completely digested with a proteolytic enzyme. No. 2,319,186. James Ingle to Industrial Patents Corp.

Lubricating grease, comprising mineral lubricating oil, inert filler and the saponification products of saponifiable materials selected from the group consisting of animal and vegetable waxes of which at least about half of the soap is a soap of such wax. No. 2,319,076. Lester McLennan and Oliver Neukom to Union Oil Company.

Gasket material adapted to flow under heat and pressure, comprising asbestos board and a binder. No. 2,319,033. Wilburn Bernstein, Thomas Mika and Stephen Lillis and Ortho Colwell to Victor Manufacturing & Gasket Co.

Insecticide containing as an active ingredient a water-dispersible composition comprising partial lauric acid ester of a compound selected from the class consisting of hexitans and hexides. No. 2,318,920. Kenneth Brown to Atlas Powder Co.

Bearing grease comprising a mineral oil and a soap base. No. 2,318,847. George W. Flint and Hubert J. Liehe to Standard Oil Co. (Corp. of Ind.)

Dental material comprising the product which results from the polymerization of a mixture of monomeric ethyl alpha methacrylate, diallyl itaconate, and styrene in the presence of polymeric ethyl alpha methacrylate. No. 2,318,845. Roy C. Feagin and Charles H. Prange to Austenal Laboratories, Inc.

Metal marking composition. No. 2,318,803. Wallace K. Schneider and George W. Seagren to Stoner-Mudge, Inc.

Process of producing aerated plaster of Paris compositions and articles made therefrom. No. 2,318,754. Conrad G. F. Cavadino to Gyproc Products Ltd.

Lubricating composition. No. 2,318,630. Carl Prutton to The Lubri-Zol Corp.

Lubricating composition. No. 2,318,629. Carl Prutton to The Lubri-Zol Corporation.

Coatings

Applying a flexible, strongly adhering coating. No. 2,315,974. Carl J. Malm and Gerard J. Clarke to Eastman Kodak Co.

Producing a stable quick setting dry asphalt coating. No. 2,314,329. Walter Ericson.

Coating material for wet siliceous aggregates comprising a bituminous material and wax-benzyl trimethyl ammonium chloride. No. 2,314,111. Elton Tucker and Henry Grubb to Standard Oil Co.

Coating composition comprising an alkyd resin modified with a compound having the acid radical of an oil having drying properties and an organic oxide. No. 2,313,799. James Bullitt, Jr., Peter Evans, and Horace Hopkins to E. I. du Pont de Nemours & Co.

Outer coating for yarn comprising reaction products of a partially condensed phenol aldehyde resin and a partially condensed alkyd resin in the presence of a drying oil fatty acid. No. 2,313,727. Everett Atwell to Atlantic Rayon Corp.

Dye-resistant coating composition. No. 2,313,726. Everett Atwell to Atlantic Rayon Corp.

Coating composition which is highly resistant to oils and greases. No. 2,315,347. Walter Moffett to E. I. du Pont de Nemours & Co.

Preparing a coating composition in form of an aqueous emulsion from excess sprayed coating material obtained by directing the overspray into a curtain of water. No. 2,315,125. Joseph Meckler.

Process of coating strands. No. 2,315,645. Edwin E. Newton, Cyril A. Peachey and Frederick R. Reevely to Western Electric Company, Inc.

Staining corrosion resistant paint holding coatings upon surfaces of iron and steel by means of non-electrolytic chemical treatment. No. 2,315,564. John S. Thompson and Edwin W. Goodspeed to Parker Rust-Proof Co.

Preparing a waterproofing composition. No. 2,318,302. Constantine Fabian and James Lee to Lee Bros. Hats, Inc.

Applying a coating of powdered luminescent material to the inner surface of a glass tube having both ends open. No. 2,318,060. Thomas Cortese.

Luminescent coating for electric lamps. No. 2,317,977. Ezio Casellini to Sylvania Electric Products Inc.

Coating composition comprising an aqueous solution of the ammonium salt of an inter-polymerization product of vinyl acetate with crotonic acid. No. 2,317,725. Kurt Billig.

Color-coating cellulosic materials. No. 2,317,436. Ernest Boiler, Howard Hanthorn and Robert Treadway to E. I. du Pont de Nemours & Co.

Coating and decorating composition comprising copper phthalocyanine dispersed in a liquid. No. 2,317,371. Albert Gessler and David Gans to Interchemical Corp.

Method of preparing bituminous coating mixtures. No. 2,316,357. Ernest H. Nichols.

Vinyl resin coating composition. No. 2,316,323. Arthur K. Doolittle to Carbide and Carbon Chemicals Corp.

Coating comprising 3 parts nitrocellulose, 5 parts modified rosin, 1.5 parts dibutyl phathalate, 0.5 parts paraffin wax, 0.5 parts benzoyl peroxide and 52 parts cyclohezyl methacrylate. No. 2,316,274. James A. Mitchell to E. I. du Pont de Nemours & Co.

Coating ferrous metal surfaces with water insoluble metallic phosphates. No. 2,316,811. Gerald C. Romig to American Chemical Paint Co.

Preparing or replenishing acid zinc phosphate coating solution. No. 2,316,810. Gerald C. Romig to American Chemical Paint Co.

Acid resistant coatings comprising a copolymer of vinyl acetate and vinyl chloride together with polymerized coumarone. No. 2,317,176. John J. Mick and Ralph McCurdy to The B. F. Goodrich Co.

Protective coating composition comprising approximately two parts polymerized butyl methacrylate, approximately one part copolymers of vinyl chloride and vinyl acetate and approximately three-fourths part normally solid chlorinated diphenyl. No. 2,318,780. James Willard Humphrey to American Viscose Corp.

Dyes, Stains

Azo dyestuffs and process for coloring therewith. No. 2,314,440. Bernd Bock and Hanns Ufer and Helmut Kleiner to General Aniline & Film Corp.

Dye for animal and related fibers comprising a water soluble alkanolamine salt of an anthraquinone sulfonic acid. No. 2,314,356. Henry Lee and Charles Young to E. I. du Pont de Nemours & Co.

Process for the manufacture of substantive azo dyestuffs. No. 2,314,023. Fritz Straub and Walter Hanhart to Society of Chemical Industry in Basle.
Azo dyes. No. 2,313,738. Joseph Dickey and James McNally to Eastman Kodak Co.
Water-insoluble disazo dyes. No. 2,315,232. Alfred Thurm and Hans Krazikalla and Alfred Kirsch to General Aniline & Film Corp.
Manufacture of polyazoic dyestuffs. No. 2,315,220. Pierre Petitcolas and Robert Sureau.
Process of making indigoid dyestuffs. No. 2,315,195. Jaroslav Froehlich, Ernst Stoecklin, and Richard Tobler to Society of Chemical Industry in Basle.
Arylamino anthraquinone dyestuffs and a process for their manufacture. No. 2,315,788. Ernst Gutzwiller to Sandoz Ltd.
Preparing a polymethine dye intermediate comprising condensing a mercaptan with a cyclammonium quaternary salt containing a halogenovinyl group. No. 2,315,498. Leslie G. S. Brooker and Grafton H. Keyes to Eastman Kodak Co.
Producing vat dye powders. No. 2,318,439. William Waldron to E. I. du Pont de Nemours & Co.
Alkyl ethers of Bz-2:Bz-dihydroxydibenzanthrone, which dye cotton form blue alkaline hydrosulfite vats. No. 2,318,266. Otto Stallmann, to E. I. du Pont de Nemours and Company.
Water soluble sulfonation derivative, of 4-benzoylamino 8-amino-1,2-anthraquinone-2,1-naphthcarbazole, which dyes wool. No. 2,318,174. Ralph Luiek and Edwin Buxbaum to E. I. du Pont de Nemours & Co.
Process of dyeing with vat dyes. No. 2,318,133. William Wentz to E. I. du Pont de Nemours and Co.
Dyestuffs becoming green when chromed and their manufacture. No. 2,317,733. Achille Conzetti and Guido Schetty to J. R. Geigy A.G.
Dispersible disazo dye. No. 2,317,387. Donovan Kvalnes and Sanford Smith, and Cheves Walling to E. I. du Pont de Nemours & Co.
Preparing a cyclammonium quaternary salt for dye intermediate. No. 2,317,357. Lester Brooker and Homer Cressman to Eastman Kodak Co.
Azo compounds and material colored therewith. No. 2,317,365. Joseph Dickey and James McNally to Eastman Kodak Co.

Equipment

Infrared spectrophotometer. No. 2,314,800. Orrin Pineo to American Cyanamid Company.
Dried filter paper for the determination of albumin in urine. No. 2,314,548. Leslie McClintock.
Filter paper for determination of albumin in urine comprising a body of porous paper impregnated with sulfosalicylic acid and dried. No. 2,314,336. Raymond Goodale.
Apparatus for treating ergosterol or other activatible material to impart the antirachitic property. No. 2,314,119. Lester Borchardt to General Mills, Inc.
Molding by injection an organic thermoplastic article. No. 2,313,985. Russell Bradshaw to The Dow Chemical Co.
Apparatus for dispensing insecticides. No. 2,313,976. William Sullivan and Lyle Goodhue.
Acetylene tank cart. No. 2,313,868. Leslie Garlinghouse.
Fractional distillation apparatus. No. 2,317,952. Robert Burk and Einar Kropp to The Standard Oil Co.
Fractional distillation apparatus. No. 2,317,951. Robert Burk to The Standard Oil Co.
Oil testing apparatus. No. 2,317,950. Robert Burk and Everett Hughes to The Standard Oil Co.
Cooling trap primarily for condensing vapors of mercury and the like. No. 2,317,814. Hans Schuchmann and Walter Steinmetz.
Steam distributor for a web drying roll for regenerated cellulose. No. 2,316,212. Francis P. Alles to E. I. du Pont de Nemours & Company.
Smokeless powder processing apparatus. No. 2,316,195. Bernhart Troxler to Hercules Powder Co.
Cementing apparatus for joining a shoe sole and upper by means of a thermoplastic adhesive. No. 22,301. Earle C. Putman to E. I. du Pont de Nemours & Company.
Mercury vapor electric discharge lamp. No. 2,315,366. Alfred Ruttenauer and Otto Fritze to General Electric Co.
Multiple casting mold for synthetic materials. No. 2,316,298. Ernst Strunk vested in Alien Property Custodian.
Apparatus for determination of moisture in gases. No. 2,316,624. Emilio Romanelli to Westinghouse Electric & Mfg. Co.
Container for storage of solutions of peroxygen compounds. No. 2,316,487. Joseph S. Reichert and Samuel A. McNeight to E. I. du Pont de Nemours & Co.
Leak testing bath and method of testing. No. 2,316,842. John D. Coleman to General Motor Corp.
Specimen holder for X-ray analyses. No. 2,317,329. Dan McLachlan, Jr. to American Cyanamid Co.
Apparatus for collecting the overspray, in the form of substantially dry paint particles. No. 2,319,082. John Nestor to E. I. du Pont de Nemours & Company.
Temperature responsive electric switch. No. 2,318,699. Ira E. McCabe.
Regenerative furnace for manufacture of acetylene by pyrolysis. No. 2,318,688. Rudolph Leonard Hasche and William B. Hincke to Eastman Kodak Co.

Explosives

Explosive composition comprising a water-soluble oxygen-supplying inorganic salt, and linseed meal in pulverulent form. No. 2,314,832. William Kirst and Clarence Winning to E. I. du Pont de Nemours & Co.
Explosive composition comprising a water-soluble oxygen-supplying inorganic salt, a sensitizing agent, and a cereal meal of the species Andropogen sorghum in pulverulent form. No. 2,314,810. Clarence Winning to E. I. du Pont de Nemours & Co.

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Explosive composition comprising a water-soluble oxygen-supplying inorganic salt, a sensitizing agent, and barley meal in pulverulent form. No. 2,314,806. Clarence Winning to E. I. du Pont de Nemours & Co.

Preparing filling material for incendiary bombs and flares. No. 2,314,614. Ernest Fisher.

Fine Chemicals

Diethyl acetate of corticosterone. No. 2,316,142. George F. Cartland and Marvin H. Kutzerga to the Upjohn Co.

Vitamin D distillation process for fish oils and products. No. 2,316,608. Kenneth C. D. Hickman and Edward Le B. Gray to Distillation Products, Inc.

Antispasmodic agents basic esters of 9, 10-dihydroanthracene-9-carboxylic acid. No. 2,316,051. John W. Cusic and Robert R. Burther to G. D. Searle & Co.

Self-developable photographic material. No. 2,315,966. Edward Bowes Knott to Eastman Kodak Co.

Preparation of N-monomethyl-P-aminophenol. No. 2,315,922. Frederic R. Bean to Eastman Kodak Co.

Preparing 1-amonophenyl-5-pyrazolone-4-sulfonic acids. No. 2,315,834. Paul Zervas to General Aniline & Film Corp.

Condensation products of 1-aminoaryl-5-pyrazolone-4-sulfonic acids. No. 2,315,835. Paul Zervas to General Aniline & Film Corp.

Preparing 1-phenyl-3-methyl-5-pyrazolone-4-sulfonic acid. No. 2,315,836. Paul Zervas to General Aniline & Film Corp.

5-ethyl-5-phenyl barbituric compounds and methods of preparing these compounds. No. 2,314,537. Henry Henze to Eli Lilly and Co.

Photographic reversal process. No. 2,314,380. James Alburger to Radio Corporation of America.

Extracting from natural grain germ all of the oil with a heated solvent of the class consisting of chlorine derivatives of the lower molecular weight paraffins and subsequently completely removing the solvent from the germ at a temperature and acidity to maintain the vitamin B and vitamin B_2 content unimpaired. No. 2,314,282. Ezra Levin.

Manufacture of progesterone from bile acids. No. 2,314,185. Bernhard Zondek and Ernst Bergman.

Photographic silver halide emulsion containing a supersensitizing combination. No. 2,313,922. Burt Carroll and John Leermakers to Eastman Kodak Co.

Halogenated pregnanolones and pregnandiones. No. 2,313,732. Adolf Butenandt to Schering Corp.

Conversion of acetylene derivatives of the saturated and unsaturated cyclopentanopolyhydrophenanthrene series. No. 2,315,817. Leopold Ruzicka to Ciba Pharmaceutical Products, Inc.

Manufacture of quaternary acylcyanoguanidines. No. 2,315,765. Jakob Bindler to J. R. Geigy A. G.

Preparation of the cyanhydrin of formisobutyraldol. No. 2,315,679. Kurt Warnal to Hoffmann La Roche Inc.

Manufacture of phytyl bromide. No. 2,315,580. Robert Behnisch to Winthrop Chemical Co. Inc.

Benzacridonyl anthraquinone dyestuff. No. 2,315,537. Alfred Miller to Allied Chemical & Dye Corp.

Hydrogenated phenanthrene compound and a method of making the same. No. 2,315,505. Elisabeth Dane to Schering Corp.

Preparation of ascorbic acid and 1-gulosone. No. 2,318,500. Charles King and Elam White, one-half to Parke, Davis & Co., one-half to Abbott Labs.

Light-sensitive diazotype layers, and methods of making same. No. 2,318,352. Roelof Jan Hendrik Alink to Hartford National Bank and Trust Co.

Manufacture of hydrated acetylene derivatives of the cyclopentanopolyhydrophenanthrene series. No. 2,318,105. Leopold Ruzicka, to Ciba Pharmaceutical Products.

Light sensitive material, for color photography. No. 2,318,007. Walter Michaelis, Chromogen Incorporated.

Quaternary Ammonium Compounds. No. 2,317,999. Friedrich Leuchs to Winthrop Chemical Co.

Finishing photographic layers by subjecting the layers to different treating baths. No. 2,317,750. Walter Fermazin.

Reaction product of aldehydes and pyrimidyl cyanoalkyl sulfides. No. 2,317,736. Gaetano D'Alilio and James Underwood to General Electric Co.

Reaction product of aldehydes and pyrimidine derivatives. No. 2,317,737. Gaetano D'Alilio and James Underwood to General Electric Co.

Bactericide formed by reacting a dilute solution of copper acetate with a dilute solution of a rosaniline dye. No. 2,317,670. Oakley Cook and Claud Watson one-tenth to Albert L. Reed.

Therapeutic product, a dye selected from the group consisting of triphenyl-rosaniline, triphenyl-para-rosaniline and hexamethyl- pararosaniline chemically combined with the metal ion of a metal. No. 2,317,671. Oakley Cook and Claud Watson one-tenth to Albert L. Reed.

Sensitizer comprising light-sensitive chemicals and a gel-forming colloidal clay. No. 2,317,521. Clyde Crowley and John Mullen to The Huey Co.

Antiseptic materials comprising higher molecular weight aliphatic alcohol poly-esters of aliphatic amino poly-carboxylic acids. No. 2,317,378. Benjamin Harris.

Producing photographic multicolor prints from a multicolor printing prototype containing color separation records in the form of differently colored part images. No. 2,317,369. Bela Gaspar to Chromogen, Inc.

Purification or concentration of tocopherol. No. 2,317,353. James Baxter to Distillation Products, Inc.

Photographic silver halide gelatin emulsion containing a 2.2'-monomethine cyanine and a non-quaternary atyryl compound. No. 2,316,268. Alfons Mareis to General Aniline & Film Corp.

Disodium monocetyl-monosulfosuccinate. No. 2,316,234. Lawrence H. Flett to Allied Chemical & Dye Corp.

Acyl derivatives of germinal gland hormone preparations of high activity and a method of producing same. No. 2,316,190. Walter Schoeller and Friedrich Hildebrandt and Erwin Schwenk to Schering Corp.

Production of allergic extracts. No. 2,316,311. Charlotte H. Boatner to B. D. E. Corp.

Obtaining individual color-component records from a multilayer differentially color-sensitized film element containing developed color component images. No. 2,316,284. Virgil B. Sease and Deane R. White to E. I. du Pont de Nemours & Co.

Retouching photographic subtractive multi-color images on photographic multi-layer material. No. 2,316,291. Wilhelm Schneider and Gustav Wilmanns to General Aniline & Film Corp.

Production of alimentary preparations from animal blood and from serum obtained from blood through separation of the red corpuscles from the whole blood. No. 2,316,733. Charles Weizmann.

Photographic plate or film for the investigation of bodies or substances by means of neutrons. No. 2,316,595. Hartmut I. Kallmann formerly Hartmut Kallmann, Ernst Kuhn and John Eggert vested in the Alien Property Custodian.

Phosphoric acid derivatives of bactericidal compounds and manufacture thereof. No. 2,316,908. Kurt Warnat to Hoffman-La Roche Inc.

Preparing cellulose esters. No. 2,316,866. Gordon D. Hiatt and Loring W. Blanchard, Jr. to Eastman Kodak Co.

Chilling photographic emulsions. No. 2,316,845. John H. Craft, Jr. to Defender Photo Supply Co., Inc.

p-Nitrobenzene sulfinamide. No. 2,316,825. Josef Vonkennel and Josef Kimming to Schering Corp.

Producing a multicolor image on a light-sensitive photographic multilayer film having a transparent support and at least three light-sensitive silver halide emulsion layers inseparably united with said support. No. 2,316,803. Walter Michaelis to Chromogen Inc.

Producing multicolor images from an exposed light-sensitive multilayer material having a support and at least three gelatin layers in superposition on said support. No. 2,316,782. Bela Gaspar to Chromogen Inc.

Leuco sulfuric acid esters of anthraquinone series. No. 2,316,758. Eduard Besler to General Aniline & Film Corp.

B-m-Methoxyphenylpropyl benzylamine. No. 2,317,013. Eugene H. Woodruff to The Upjohn Co.

B-p-Methoxyphenylpropyl benzylamine. No. 2,317,012. Eugene H. Woodruff to The Upjohn Co.

Therapeutic agent for producing bronchodilator effects comprising B-(p-methoxyphenyl) n-propyl dimethylamine. No. 2,317,011. Eugene H. Woodruff to The Upjohn Company.

Coccidicidal preparation containing sodium nitrite. No. 2,316,963. Graydon S. McKee, Wilbert M. Wilson and Harry S. Johnson.

Double salt of ferrous salt and pyridine-carboxylic acid amide, prepared for use as a therapeutic. No. 2,317,309. Hans Stenzl to J. R. Geigy A.G.

Treating lithium derivative of a-picoline with an anhydride of an aliphatic acid. No. 2,317,303. William L. Ruigh to Merck and Co., Inc.

Furane-dicarboxylic acid amides and their manufacture. No. 2,317,285. Henry Martin, Walter Baumann and Hans Gysin to J. R. Geigy A.G.

Dyeing photographic silver halide emulsions. No. 2,317,257. John Dessauer to The Haloid Co.

Manufacture of a colloid layer for photographic purposes. No. 2,317,184. Paul Dreyfuss to Chromogen, Inc.

Photographic stripping material, comprising a temporary support, a light-sensitive layer thereon and a water-sensitive adhesive for temporarily bonding support to said layer, said adhesive comprising a water-swellable adhesive colloid and a member of the class consisting of waxes, paraffin, and stearic acid. No. 2,319,102. Fritz Albers and Arthur Allendorfer to General Aniline & Film Corporation.

New Product, containing a member of the group consisting of 2-methyl-1,4-naphthoquinone and 2-methyl-1,4-naphthohydroquinone and a water-soluble salicylate. No. 2,319,094. Carl Truebe, George Shahovskoy and Joseph Levy to Ernst Bischoff Company, Inc.

Photographic emulsion, comprising a colloidal material having a sensitive silver salt dispersed therein and containing a sulfur derivative of a pyrimidine selected from the group consisting of thiopurines and thiouracils in fog-inhibiting amounts. No. 2,319,090. Samuel Sheppard and Waldemar Vanselow to Eastman Kodak Company.

Sensitive photographic element, comprising a light-transmitting support having thereon a sensitive emulsion layer and an anti-halation layer of polyvinyl ester of a lower fatty acid and a dicabroxylic acid, and a dye. No. 2,319,080. Gale Nadeau and Alfred Slack to Eastman Kodak Company.

N-sulfoalkyl-p-aminophenol. No. 2,319,078. James McNally and Joseph Dickey to Eastman Kodak Company.

High speed gelation process of making sheeting suitable for photographic film base. No. 2,319,055. Charles Fordyce and Austin Gould to Eastman Kodak Co.

High speed gelation process of making sheeting suitable for photographic film base. No. 2,319,054. Charles Fordyce and Walker Hunter, Jr. to Eastman Kodak Co.

High speed gelation process of making sheeting suitable for photographic film base. No. 2,319,053. Charles Fordyce and Walker Hunter, Jr. to Eastman Kodak Co.

High speed gelation process of making sheeting suitable for photographic film base. No. 2,319,052. Charles Fordyce and Walker Hunter, Jr. to Eastman Kodak Co.

High speed method of making cellulose organic derivative film and sheeting. No. 2,319,051. Charles Fordyce and Walker Hunter, Jr. to Eastman Kodak Co.

Anthraquinone compounds and cellulose derivatives colored therewith. No. 2,319,043. Joseph Dickey and James McNally to Eastman Kodak Co.

Dimethyl-cyclopentano-polyhydro-phenanthrene compounds and process of making same. No. 2,319,013. Karl Miescher and Albert Wettstein to Ciba Pharmaceutical Products, Inc.

Dimethyl cyclopentanopolyhydrophenanthrene compounds containing in a 17-position an oxo-group and in the rings A and B only a carbon double bond. No. 2,319,012. Karl Miescher and Albert Wettstein to Ciba Pharmaceutical Products, Inc.

Acridinium azo compounds. No. 2,318,968. Frederick Proescher and Vladimir Sycheff to Research Corp.

Biologically active substance for controlling procreative metabolism. Nos. 2,318,894-2,318,895-2,318,896. Lee Smith to Regents of the University of Minn.

Production of colored photographic images. No. 2,318,818. Alan B. Tull to Latta Syndicate Ltd.

Incorporation of couplers in nongelatin emulsions. No. 2,318,788. John A. Leermakers and Scheuring S. Fierke to Eastman Kodak Company.

Production of fat-soluble vitamin concentrates. No. 2,318,749. Loran O. Buxton and Howard B. Colman to National Oil Products Co.

Process for preparing a provitamin A extract from palm oil containing provitamin A. No. 2,318,747. Loran O. Buxton to National Oil Products Co.

Degradation products containing carboxyl groups from compounds of the oestrane series and a method of making the same. No. 2,318,609. Walter Hohlweg, Hans Herloff Inhoffen to Schering Corporation.

Industrial Chemicals

Preparing zirconyl oxalate. No. 2,316,141. Eugene Wainer to The Titanium Alloy Mfg. Co.

Treating the interior of a gas distribution system by applying a dust laying agent a neutral oil. No. 2,316,140. John R. Skeen to the United Gas Improvement Co.

Isomerization of dihydrobenzenes. No. 2,316,136. Norris Turnbull to E. I. du Pont de Nemours & Co.

Preparing water-insoluble B-cyaneothyl ethers of starch. No. 2,316,129. Louis H. Bock and Alva L. Houk to Rohm & Haas.

Water-soluble b-carboxyethyl ether of starch. No. 2,316,128. Louis H. Bock and Alva L. Houk to Rohm & Haas.

Alkylation of organic compounds using conc. H_2SO_4 catalyst. No. 2,316,108. Robert F. Ruthruff.

Producing a simulated hammered metal finish. No. 2,316,041. Gerald E. Armentrout to E. I. du Pont de Nemours & Co.

Production of gas fractions, having a relatively high concentration of unsaturated constituents from feed gas mixtures. Eldon E. Stahly to Jasco Inc.

Recovering oil sorbed in materials characterized by preferential wetting by water in reference to oil. No. 2,316,005. Frank B. Lachle to The Schwarz Engineering Co., Inc.

Removing nitrogen oxides from concentrated sulfuric acid. No. 2,315,988. Norman C. Somers and Walter Crews Woodings, Jr., to E. I. du Pont de Nemours & Co.

Separating cineole from a cineole-terpene mixture. No. 2,315,986. Paul H. Scrutchfield to Hercules Powder Co.

Condensation product of diphenyl ether monosulfonic acid with formaldehyde. No. 2,315,951. Arthur L. Fox and Paul O. Bare to E. I. du Pont de Nemours & Co.

Diazine derivatives. No. 2,315,940. Gaetano F. D'Alelio to General Electric Co.

Triazine derivatives. No. 2,315,939. Gaetano F. D'Alelio to General Electric Co.

Production of primary alkyl monohalides from isomeric alkyl monohalides. No. 2,315,871. George G. Oberfell and Frederick E. Frey to Phillips Petroleum Company.

Isoalkylamine salts of organic sulfonic or carboxylic acids. No. 2,315,870. Friedrich Nadler, Richard Wegler and Otto Dayer to General Aniline & Film Corp.

Wear test method and composition. No. 2,315,845. Seymour W. Ferris to The Atlantic Refining Co.

Electrolytically decomposing potassium amide in a solution of potassium amide in liquid ammonia to form potassium in a cell having a potassium amalgam anode. No. 2,315,830. Raymond A. Vingee and Charles K. Lawrence to The Solvay Process Co.

Production of sulfonated esters of cis-endomethylene-3, 6-delta⁴-tetrahydrophthalic acid. No. 2,314,846. Paul McClellan and Jack Bacon to American Cyanamid Co.

Preparing nicotinamide which comprises reacting nicotinic acid and urea at a temperature from 180° C. to 250° C. No. 2,314,843. Martin Hultquist to American Cyanamid Co.

Producing a compound containing the acid radical of dextro-tartaric acid by fermentation. No. 2,314,831. Jonas Kamlet to Miles Laboratories, Inc.

Refractory composition for supporting loads at high temperatures. No. 2,314,758. Milton Berns to Electro Refractories & Alloys Corp.

Process for extracting pure nitrogen from air. No. 2,314,827. Richard Hortvet to Diamond Iron Works, Inc.

Stabilized ice color composition containing guanylurea. No. 2,314,652. Paul McClellan and Walter Ericks to American Cyanamid Co.

Briquette carbonizing process using modified tar or pitch binders. No. 2,314,641. Clayton Wolf to American Cyanamid Co.

Method of transferring heat by a heat exchange liquid of orthodichlorobenzene and an alcohol. No. 2,314,636. Louis Slabkowiez to The Dow Chemical Co.

Purifying a glyceride oil mixture. No. 2,314,621. William Kelley to Filtrol Company of California.

Fuel for internal combustion engines, a mixture comprising gasoline and a small amount of a salt of an unsaturated organic acid. No. 2,314,575. Albert Doran to Dorex, Inc.

Process for desulfurizing oils. No. 2,314,576. Albert Doran to Dorex Corp.

New chemical compound 1, 4-dinitrobutene-2. No. 2,314,615. Reginald Franklin and Frederick Wilkins to Imperial Chemical Industries Ltd.

Producing gamma-halogen gamma-aceto propyl alcohol. No. 2,314,571. Edwin Buchman to Research Corp.

Process of cracking hydrocarbons which comprises producing an electrical arc between the two aluminum oxide containing electrodes immersed in a body of a liquid hydrocarbon to produce a colloidal dispersion of said oxide. No. 2,314,561. Felix Skowronski to The Winkler-Koch Patent Co.

Inhibiting the polymerization and condensation of an organic compound having the vinyl group. No. 2,314,466. Herman Thwaites to Jasco, Inc.

Producing cold-swelling preparations from blancmange- or pudding-forming starch. No. 2,314,459. August Salzburg to Dryfood Ltd.

Production of esters of halogen alcohols. No. 2,314,454. Friedrich Manchen and Willi Schmidt to General Aniline & Film Corp.

Purification of alpha chloroacrylic compounds preliminary to polymerization. No. 2,314,443. John Crawford, Frodsham, and Nancy McLeish to Imperial Chemical Industries Ltd.

Preparation of aliphatic peracids by oxidation of aldehydes. No. 2,314,385. Joseph Bludworth to Celanese Corporation of America.

Producing parahydroxyarylsulfones. No. 2,314,379. Werner Zerweck and Walter Brunner to General Aniline & Film Corp.

Stabilizing glyceride oils subject to oxidative deterioration. No. 2,314,365. Sidney Musher to Musher Foundation, Inc.

Stabilizing glyceride oils subject to oxidative deterioration. No. 2,314,364. Sidney Musher to Musher Foundation Inc.

Stable adhesive bond for abrasive including a condensation product of phenol and a polyhydric alcohol. No. 2,314,349. Durward Guth to Minnesota Mining & Mfg. Co.

Preparation of dipotassium monosodium ferricyanide. No. 2,314,347. George Foster and Louis Lento, Jr. to American Cyanamid Co.

Production of a monoaryl-substituted phenol from aromatic light oil material containing saturated and unsaturated hydrocarbon material. No. 2,314,322. Waldo Ault to The United Gas Improvement Co.

Tenderizing casing and destroying tenderizing enzyme with oxidizing agent. No. 2,314,313. Cleo Renehart to Industrial Patents Corp.

Mono-ethers of chloro-alkyl acetals. No. 2,314,305. Edgar Britton and Clarence Moyle to The Dow Chemical Co.

Apparatus for preparing cement raw material. No. 2,314,296. Carlo Wanner.

Method of and system for vaporizing hydrocarbon liquids. No. 2,314,279. Sam Jones.

Production of alkyl aryl sulfonates. No. 2,314,255. Gilbert Toone to Allied Chemical & Dye Corp.

Nitrating mixture comprising nitric acid, boron trifluoride and an aromatic carbocyclid compound. No. 2,314,212. George Hennion to E. I. du Pont de Nemours & Co.

Diazo composition comprising diazotized 4-chlor-2-nitraniline and sulfamic acid and its salts, as a stabilizing agent therefor. No 2,314,196. Earl Clark to Allied Chemical & Dye Corp.

Treating calcium silicate prior to its incorporation as a reinforcing pigment in rubber. No. 2,314,188. Raymond Allen to The B. F. Goodrich Co.

Bituminous material. No. 2,314,181. Hans Winterkorn to The Quaker Oats Co.

Catalytic hydrogenation of unsaturated hydrocarbons. No. 2,314,142. Stanley Haney to Sinclair Refining Co.

Leavening acid comprising non-porous crystallized anhydrous calcium acid pyrophosphate and monocalcium orthophosphate. No. 2,314,090 Arthur Huff to Monsanto Chemical Co.

Treating a well by introducing into the well an acid containing emulsified demulsifying agent capable of preventing and breaking emulsions between oil and said acid. No. 2,314,022. John Stone to The Dow Chemical Co.

Allyl glycidyl ether. No. 2,314,039. Theodore Evans, Kenneth Marple, and Edward Shokal to Shell Development Co.

Organic sulfur and selenium compounds. No. 2,313,993. Bela Gaspar to Chromogen, Inc.

Catalytic cracking and reclamation of catalysts. No. 2,313,940. Joel Hirsch to The Vickers Petroleum Co. of Delaware.

Removing water-associated impurities from an oil. No. 2,313,939. Gordon Hanson to Petrolite Corp.

Purification of recovered sulfuric acid. No. 2,313,910. Francis Archibald to Standard Oil Development Co.

Proteolytic enzyme process. No. 2,313,875. Eugene Jansen and Arnold Balls.

Linear polythiourea. No. 2,313,871. William Hanford and Paul Salzberg to E. I. du Pont de Nemours & Co.

Manufacturing cellulose alkyl esters low in turbidity and soluble in organic solvents from lightly felted sheet cellulose. No. 2,313,866. Alexander Finlayson to Hercules Powder Co.

Method of precipitation. No. 2,313,844. Roy Sullivan to E. I. du Pont de Nemours & Co.

Substituted phenol. No. 2,313,782. Fred Taylor and John Livak to The Dow Chemical Co.

Hydrolysis of allyl halides. No. 2,313,767. Maxwell Pollack and Albert Chemicek to Pittsburgh Plate Glass Co.

Polymeric vinylidene chloride product, and, as a stabilizing agent therefor, an allyl ester of a dicarboxylic acid. No. 2,213,757. Lorne Matheson and Raymond Boyer to The Dow Chemical Co.

Making amido-ethers. No. 2,313,741. Max Engelmann and Josef Pikl to E. I. du Pont de Nemours & Co.

Naphthalenic compound. No. 2,313,739. Edward Doisy, Sidney Thayer, Stephen Binkley and Ralph McKee, and Donald MacCorquodale to St. Louis University.

Removing carbon deposits from internal combustion engines using H_2O_2. No. 2,313,730. Ernest Boesing to Buffalo Electro-Chemical Co., Inc.

Manufacture of organic sulfitation products. No. 2,313,719. Leland Beckham to The Solvay Process Co.

Reconditioning a contaminated aqueous alkali metal hydroxide solution which was used to extract weak acids from a sour hydrocarbon distillate and regenerated by steam stripping. No. 2,315,480. Lawson Border to Shell Development Co.

Manufacture of barium carbonate. No. 2,315,472. Isaac Weber and William Wood.

Thermosetting aminotriazine-formaldehyde condensation product. No. 2,315,401. Gaetano D'Alelio to General Electric Co.

Sulfo tricarboxylic acid compounds and process of preparing same. No. 2,315,375. Paul Nawiasky and Gerhard Sprenger to General Aniline & Film Corp.

Forming light-polarizing images. No. 2,315,373. Edwin Land to Polaroid Corp.

Making improved shaped graphite electrodes. No. 2,315,346. Joseph Mitchell to Imperial Chemical Industries Ltd.

Nicotine derivative. No. 2,315,314. Alfred Burger to Tobacco By-Products and Chemical Corp.

Increasing the wet flex strength and electrical surface resistance under humid conditions of glass fibers. No. 2,315,259. James Hyde to Owens-Corning Fiberglas Corp.

Recovering ammonia and heat values from the spent precipitation liquors from cuprammonium cellulose solutions. No. 2,315,201. Alfred Haltmeier.

Refractory comprising mixture of a material rich in magnesium orthosilicate, and Portland cement. No. 2,315,198. Victor Goldsmidt and Kristoffer Stenvik.

Treating basic lead sulfate produced by the sublimation process. No. 2,315,188. William Clapson to The Eagle-Picher Lead Co.

Production of lactic acid esters of glycerol, which comprises condensing a glycerol dihalohydrin with an alkali salt of lactic acid. No. 2,315,168. George Urquhart.

Separation of furfurylamine from admixture with other liquids incapable of forming azeotropes. No. 2,315,139. Leonard Stengel and Walter O'Loughlin to Commercial Solvents Corp.

Condensing hydrocarbon vapors and gases obtained as an overhead from the fractionation of hydrocarbons under superatmospheric pressure. No. 2,315,122. Wheaten Kraft to The Lummus Co.

Detecting alterations of documents. No. 2,315,111. Josef Ehrilich.

Producing alkyl cyclohexane hydrocarbons from alkyl cyclopentane hydrocarbons. No. 2,315,078. Herman Pines and Vladimir Ipatieff to Universal Oil Products Co.

Improving a high-temperature oxidation inhibitor containing a sulfur family element in a state corrosive to copper and similar metals. No. 2,315,072. Joseph Nelson and Raphael Rosen to Standard Oil Development Co.

Protective composition impervious to X-rays. No. 2,315,061. Emory King one-third to Jack C. Booher, and one-third to Wilia W. Daywait.

Production of ketones by reacting an olefin with an organic acid anhydride in presence of anhydrous zinc chloride. No. 2,315,046. Alva Byrns to Union Oil Co. of Calif.

Conditioning heavy viscous substantially unpumpable sulfuric acid sludge to facilitate the pumping. No. 2,315,044. David Bransky to Standard Oil Co.

Treating cotton cord with a heat-hardening resorcinol-formaldehyde-latex adhesive. No. 2,314,996. Edward Lessig and Ivan Gazdik to The B. F. Goodrich Co.

Inhibiting deleterious changes in fatty materials which comprises incorporating the unsaponifiable portion of coffee oil with a fatty substance. No. 2,314,988. William Johnston and Herbert Gore and Charles Frey to Standard Brands Inc.

Treating cotton with a heat-hardening polyhydricphenol-aldehyde-latex adhesive. No. 2,314,976. Ivan Gazdik and Edward Lessig to The B. F. Goodrich Co.

Production of synthetic linear polymers of high molecular weight containing ether linkages in the main chain and nitrogen-containing radicles attached to the main chain. No. 2,314,972. Henry Dreyfus to Celanese Corp. of America.

Preparing homologues of oxytetronic acid. No. 2,314,946. Fritz Micheel and Hans Haarhoff to Boehringer Corp.

Process for extracting and concentrating sulfur dioxide from a gas. No. 2,314,936. Leon Guyard.

Preparing crystalline sorbitol from an overloaded impure feed solution of sorbitol in water. No. 2,315,699. Rudolph M. Goepp, Jr. to Atlas Powder Co.

Producing higher alkyl aromatic sulfonates from non-aromatic hydrocarbons and aromatic compounds. No. 2,314,929. Lawrence Flett to Allied Chemical & Dye Corp.

Removing weakly acidic substances from otherwise neutral water-immiscible organic liquid. No. 2,314,919. Donald Bond, George Ayers and Lawrence Henderson to The Pure Oil Co.

Producing benzene-soluble cyclic diene polymer by the catalytic polymerization of a cyclic diene compound. No. 2,314,911. Samuel Trepp to The United Gas Improvement Co.

Polymerization of unsaturated compounds having the cyclopentadiene nucleus. No. 2,314,910. Samuel Trepp to The United Gas Improvement Co.

Polymerization of unsaturated compounds having the cyclopentadiene nucleus. No. 2,314,909. Samuel Trepp to The United Gas Improvement Co.

Producing benzene-soluble cyclic diene polymer by the catalytic polymerization of a cyclic diene compound. No. 2,314,908. Samuel Trepp to The United Gas Improvement Co.

Polymerization of unsaturated compounds having the cyclopentadiene nucleus. No. 2,314,904. Frank Soday to The United Gas Improvement Co.

Producing benzene-soluble cyclic diene polymer by the catalytic polymerization of a cyclic diene compound. No. 2,314,903. Frank Soday to The United Gas Improvement Co.

Conversion of fatty acid substances of fatty acids and esters to the corresponding nitriles. No. 2,314,894. Ralph Potts.

Obtaining resinous and volatile by-products from oil of the coffee bean. No. 2,314,893. Herbert Polin, Albert Nerken, and Henry Wettingfeld to Coffee X Corp.

Preparation of organic sulfinic acids. Arthur L. Fox to E. I. du Pont de Nemours & Co.

Purifying phosphoric acid esters used for the dephonolization of waste aqueous liquors. No. 2,315,495. Hermann Beeg and Kurt Weichert to Alien Property Custodian.

Formaldehyde-urea adhesive. No. 2,315,776. William C. Dearing and Kenneth D. Meiser.

Removal of color-forming impurities from a crude resin oil in which the polymerizable constituents consist predominantly of material selected from coumarone, indene and homologues of styrene. No. 2,315,771. Edwin L. Cline to Allied Chemical & Dye Corp.

Method of and apparatus for separating crystals from solutions. No. 2,315,762. Georg B. Ax and Kurt H. Grunewald, Oscar A. Wiberg and Erik Oman. Ax, Grunewald and Wiberg to Oman.

Preparation of lower alkyl ethers of methylolurea. No. 2,315,745. Ben E. Sorenson to E. I. du Pont de Nemours & Co.

Treating turbid water for the removal of unfilterable turbidity by adding an amino compound. No. 2,315,734. Anderson W. Ralston and William O. Pool to Armour and Co.

Binder of molded articles, consisting of waterglass mixed with zinc stearate and brought to a creamy consistency. No. 2,315,713. Fred J. Johnson.

Separating a fatty acid containing between 12 and 18 carbon atoms from a diarylamine. No. 2,315,664. Waldo L. Semon to The B. F. Goodrich Co.

Manufacture of nitrile compounds. No. 2,315,661. Walter Salzer and Hans Andersag to Winthrop Chemical Co., Inc.

Hexahydro-hydroquinone sebacate polymerized. No. 2,315,613. Carl J. Frosch to Bell Telephone Labs.

Refining crude tall-oil which comprises subjecting the tall-oil in liquid phase to the action of oxalic acid. No. 2,315,584. Joseph N. Borglin to Hercules Powder Co.

Treating fibrous packing such as jute and hemp in a joint of a gas distribution system to reduce gas leakage therethrough, comprising impregnating said packing with a cellulosic fiber swelling agent. No. 2,315,550. John R. Skeen to The United Gas Improvement Co.

Laying gas in the interior of a gas distribution conduit comprising enveloping said dust deposits with a dust laying liquid. No. 2,315,-551. John R. Skeen to The United Gas Improvement Co.

Treatment in gas distribution systems. John R. Skeen to The United Gas Improvement Co.

Treatment in gas distribution systems. Nos. 2,315,553, 554, 555. John R. Skeen to The United Gas Improvement Co.

Production of hydroxydiphenyl ethane. No. 2,315,556. Frank J. Soday to The United Gas Improvement Co.

Preparing of halogen derivative of substituted styrene. No. 2,315,557. Frank J. Soday to The United Gas Improvement Co.

Preparation of ammonium thiosulfates. No. 2,315,534. Martin Marasco to E. I. du Pont de Nemours & Co.

Preparation of zirconium oxide. No. 2,315,520. Donald S. Hake and Harold D. Prior to The Titanium Alloy Manufacturing Co.

Preparing a metallic catalytic surface whose catalytic element is selected from the class consisting of cobalt, nickel and copper. No. 2,315,518. Marion H. Gwynn.

Preparing a high viscosity acetyl cellulose in a used acylation vessel. No. 2,318,573. Carl Malm to Eastman Kodak Co.

Increasing mechanical strength of asbestos yarn. No. 2,318,560. Kurt Ripper to American Cyanamid Co.

1-(4'-aminobenzene-sulfonyl)-amino-phenyl-alkyl-sulfone. No. 2,318-556. Winfrid Hentrich, Alfred Kirstahler and Wilhelm Kaiser to The Hydronaphthene Corp.

Manufacture of films, foils, membranes, bands and the like from solutions of cuprammonium cellulose. No. 2,318,552. Emil Czapek.

Manufacture of threads staple fiber, films and the like from cellulose-protein mixtures. No. 2,318,544. Gilbert Thurmond and James Jacokes, and Edward Brenner to American Enka Corp.

Composition comprising calcium sulfate and an alkyl aryl sulfonate. No. 2,318,540. Guy Talbert to Allied Chemical & Dye Corp.

Purifying a gas from hydrogen sulfide and carbon dioxide. No. 2,318,-523. Alfred Powell to Koppers Co.

Purifying a gas from hydrogen sulfide and carbon dioxide. No. 2,318,522. Alfred Powell to Koppers Co.

Purification and drying of chlorine gas. No. 2,318,512. Ivan McHaffie to Canadian Industries Ltd.

Production of coarse crystalline salts. No. 2,318,463. Wilhelmus Bussman to Koppers Co.

Aqueous dispersion of polymerized alkyl methacrylate and method of preparing same. No. 2,318,429. Joseph Smith to E. I. du Pont de Nemours & Co.

Antiseptic composition, comprising 4-n-hexyl-6-chloro-m-cresol. No. 2,318,387. Frank Hartman and Victor Schelling to Henry Ford Hospital.

Antiseptic composition, comprising 4-6-dichloro 2-n-hexyl-resorcinol. No. 2,318,388. Frank Hartmann and Victor Schelling to Henry Ford Hospital.

Hexylidichloro resorcinol antiseptic. No. 2,318,389. Frank Hartman and Victor Schelling to Henry Ford Hospital.

Hexyl-Chloro-m-Cresol, antiseptic. No. 2,318,390. Frank Hartman and Victor Schelling to Henry Ford Hospital.

Preparing camphene from pinene. No. 2,318,391. Clyde Henke and Gastao Etzel, to E. I. du Pont de Nemours and Co.

Range of neutral liquid condensation products, having viscosities at 25 c, at least as high as about 260 seconds Saybolt Universal. No. 2,318,373. Frank Clark to General Electric Co.

Production of pure paraldehyde. No. 2,318,341. Benjamin Thompson to Eastman Kodak Co.

Producing chlorinated hydrocarbons, without substantial formation of any chlorine substitution by-products. No. 2,318,323. Martin Cunradi to General Aniline & Film Corporation.

Improving varnish-making properties of oiticica oil. No. 2,318,304. Henry Gardner, Jr.

Inhibiting styrene, against polymerization which comprises adding hydroxylamine hydrochloride to the styrene. No. 2,318,212. Stanley Foord to International Standard Electric Corporation.

Stabilization of styrene. No. 2,318,211. Stanley Foord to International Standard Electric Corporation.

Reducing heavy oils, to relatively dry granular coke. No. 2,318,131. Ernest Utterback to Socony-Vacuum Oil Co. Inc.

Non-thermoplastic material coated with a thermoplastic material. No. 2,318,111. Alfred Steinberger to Celanese Corporation.

Treating naturally occurring proteins of the group consisting of casein, soy bean meal, albumin and sugar beet residues, to convert the

same into amino acid amides. No. 2,318,046. Frederick Bersworth to the Martin Dennis Co.

Protein-modified aminotriazine-formaldehyde condensation products. No. 2,315,402. Gaetano D'Alelio to General Electric Co.

Preparation of surface-active sulfonates. No. 2,318,036. James Werntz to E. I. du Pont de Nemours and Co.

Production of cyclopentanol, by effecting the hydrolysis of cyclopentyl chloride. No. 2,318,033. Gerald van de Griendt, Kenneth Marple and Leslie Peters to Shell Development Co.

Production of polyhydric alcohols. No. 2,318,032. Gerald Van De Driendt and Kenneth Marple and Leslie Peters to Shell Development Co.

Mixtures of substituted mononuclear aryl sulfonates. No. 2,317,986. Lawrence Flett, Allied Chemical Dye Corporation.

Luminescent material. No. 2,318,089. Harry Mattin to The Mearl Corporation.

Coloring fibrous materials and the materials obtained thereby. No. 2,317,965. Herbert Bestian, Joseph Nusslein, and Josef Monheim to General Aniline & Film Corp.

Preparing a calcined nonslaking dolomitic material for removing carbon dioxide from water. No. 2,317,961. Frederick Tschirner to Medford Engineering Co.

Bodying of drying oils. No. 2,317,915. John Jenkins to Pittsburgh Plate Glass Co.

Production of alcohols. No. 2,317,949. Robert Burk to The Standard Oil Company.

Electrochemical halohydrination and electrode regeneration. No. 2,317,866. Miroslay Tamele and Lloyd El Cerrito to Shell Development Co.

Aliphatic polymers of acetylene react with aromatic hydrocarbon. No. 2,317,842. Arthur Wolfram and Hellmuth Jahn.

Treating sulfite cellulose waste liquor to produce conversion product. No. 2,317,832. Fritz Vorsatz.

Production of phenylacetylene from an organic liquid used for washing acetylene. No. 2,317,808. Wilhelm Sandhaas.

N-vinyl compounds of lactames. No. 2,317,804. Walter Reppe, Hans Krzikalla, Otto Dornheim, and Rudolf Sauerbier.

Preparing tall oil for hydrogenation. No. 2,317,797. Anthony Oliver and Robert Palmer to Newport Industries, Inc.

Dehydrating treatment of acetic acid. No. 2,317,758. Henri Guinot.

Preparing alkylene polyamines, mono-alkyl-substituted in one amino group. No. 2,317,757. Roderich Graf.

Reaction product of aldehyde and organic sulfide. No. 2,317,738. Gaetano D'Alelio and James Underwood to General Electric Co.

Reaction product of aldehydes and triazinyl cyanoalkyl sulfides. No. 2,317,739. Gaetano D'Alelio and James Underwood to General Electric Co.

Recovery of valuable oil constituents from an acid sludge. No. 2,317,722. George Bays, Jr. to Standard Oil Development Co.

Alkylating a saturated aliphatic hydrocarbon having a tertiary carbon atom. No. 2,317,694. Clarence Ott to Shell Development Co.

Method of waterproofing inorganic hydrous oxide bodies and product. No. 2,317,685. Ernst Hauser to Research Corp.

Cyclization of hydrocarbons. No. 2,317,683. Bernard Greensfelder to Shell Development Co.

Heat convertible composition of matter comprising a solution of a cashew nut shell liquid material. No. 2,317,611. Edward Homan to The Harvel Corp.

Subjecting a mixture of a phenol of hydroxybenzene, naphthol and anthranol and their homologues with a phenol having an unsaturated hydrocarbon substituent to a condensing reaction. No. 2,317,607. Mortimer Harvey to The Harvel Corp.

Polymerization—furfuraldehyde condensation product of cashew nut shell liquid distillation residue and method. No. 2,317,587. Solomon Caplan to The Harvel Corp.

Polymerized cardanol. No. 2,317,585. Solomon Caplan to The Harvel Corp.

Producing a solid rubber-like product from cardanol, hydrocarbon ethers of cardanol and hydrocarbon ethers of cashew nut shell liquid. No. 2,317,586. Solomon Caplan to The Harvel Corp.

Inspecting bottled beverages for the purpose of locating foreign ingredients therein. No. 2,317,559. George Stout to The Coca-Cola Co.

Recovery of nitro compounds from aqueous alcoholic mixtures containing nitromethane. No. 2,317,557. Murray Senkus to Commercial Solvents Corp.

Surface active agent. No. 2,317,555. Hillary Robinette to Commerical Solvents Corp.

Production of electrical energy from pyro crystals and minerals. No. 2,317,523. James Delano.

Impregnation of fibrous materials. No. 2,317,487. Erich Schuelke.

Production of artificial straw. No. 2,317,486. George Schneider to Celanese Corp. of America.

Formaldehyde-crotonaldehyde condensation product. No. 2,317,456. William Hanford and Richard Schreiber to E. I. du Pont de Nemours & Co.

Purifying benzoic acid in an oxidation mass. No. 2,317,455. Ivan Gubelmann and Roland Benner to E. I. du Pont de Nemours & Co.

Process for making chlorine dioxide and for separating the same from chlorine. No. 2,317,443. George Cunningham to The Mathieson Alkali Works, Inc.

Separating calcium values from magnesium values. No. 2,317,396. James Murray to Warner Co.

Producing high finish prints on a web traveling at high speed. No. 2,317,372. Albert Gessler and Dominic Bernardi to Interchemical Corp.

Joining together two surfaces at least one of which comprises a hardened formaldehyde condensation product. No. 2,317,364. Norman de Bruyne and Claude Rayner to Aero Research Ltd.

Reacting glycerides containing hydroxylated fatty acid radicals with a small quantity of boryl pyrosulfate in order to produce unsaturated linkages. No. 2,317,362. Ivor Colbert to The Baker Castor Oil Co.

Dehydrogenation of hydrocarbons having 6 to 12 carbon atoms to the molecule. No. 2,316,271. William J. Mattox to Universal Oil Products Co.

2-mercapto tetrahydrobenzo-thiazole. No. 2,316,250. Paul C. Jones to The B. F. Goodrich Co.

Production of amino acids from their hydrohalides. No. 2,316,215. Paul R. Austin to E. I. du Pont de Nemours & Co.

Recovering elemental sulfur from gases containing sulfureted hydrogen, carbon oxysulfide, and carbon disulfide. No. 2,316,201. Sven J. Wallden and Ruth S. Sundgren-Wallden to Imperial Chemical Industries.

Polymer of vinyl chloride, a chlorinated aromatic hydrocarbon solvent, and a member of the class consisting of quinoline and isoquinoline. No. 2,316,197. Harold Tucker to The B. F. Goodrich Co.

Polymer of vinyl chloride, a chlorinated aromatic hydrocarbon solvent, and maleic anhydride. No. 2,316,196. Harold Tucker to The B. F. Goodrich Co.

Polymerizing oiticica oil to produce a non-frosting quick drying product. No. 2,316,187. Malcolm F. Pratt and Henry G. Berger to Socony-Vacuum Oil Company.

Heat and light-stable composition comprising a polymer of vinyl chloride and a partial ester of a polyhydric alcohol. No. 2,316,169. Archie B. Japs to The B. F. Goodrich Co.

Nitrite composition comprising a nitrite of sodium and potassium. No. 2,316,154. Francis S. Chambers, Jr. to E. I. du Pont de Nemours & Co.

Preparing sulfonium compounds. No. 2,316,152. Arthur E. Bearse and Richard S. Shutt to Battelle Memorial Institute.

Production of beta alkoxy acid halides. No. 2,316,465. Hanns P. Staudinger and Karl Heinrich W. Tuerck to The Distillers Company, Ltd.

Making a water resistant laminated article. No. 2,316,467. Oswald C. H. Sturken to Corn Products Ref. Co.

High molecular weight polymer of ethylene and carbon black. No. 2,316,418. Bernard J. Habgood to Imperial Chemical Ind. Ltd.

Polymerizing olefins by treatment with sulfuric acid. No. 2,316,380. Paul Woog vested in Alien Property Custodian.

Purifying calcium sulfate. No. 2,316,334. Paul Kubelka and Ernst Reiner vested in Alien Property Custodian.

Preparing a transparent electrochemical recording sheet material. No. 2,316,340. Earl J. Kohn to E. I. du Pont de Nemours & Co.

Conversion of hydrocarbon oils subjecting vapors evolved in a coking operation to dephlegmation in a dephlegmating zone with crude oil residual stock. No. 2,316,334. Joel H. Hirsch to de Florez Engineering Co., Inc.

Tetraethyl lead and an oil-soluble surface-active organic sulfonate in amounts effective to stabilize said tetraethyl lead against cloud formation. No. 2,316,739. Elmer W. Cook and William D. Thomas, Jr. to American Cyanamid Co.

Production of carbon tetrachloride. No. 2,316,737. Joy E. Beanblossom and Walton B. Scott to Hooker Electrochemical Co.

Production of carbon tetrachloride. No. 2,316,736. Joy E. Beanblossom and Walton B. Scott to Hooker Electrochemical Co.

Separating organic sulfate and sulfonate salts from inorganic salts. No. 2,316,719. Kenneth Lyman Russel to Colgate-Palmolive-Peet Co.

Regeneration of spent alkali metal hydroxide solution secured in the removal of mercaptan compounds from petroleum oils. No. 2,316,691. Amiot P. Hewlett to Standard Oil Development Company.

Operation of a mercury cell involving circulation of mercury in a circuit. No. 2,316,685. William C. Gardiner to The Mathieson Alkali Works Inc.

Purifying organic sulfonates. No. 2,316,670. Robert Bangs and Robert L. Brandt and Harold D. Allen to Colgate-Palmolive-Peet Co.

Condensation products of acetylene with dimethylol urea. No. 2,316,653. Walter Reppe, Ernst Keyssner and Otto Hecht to General Aniline & Film Corp.

Preparing triacetic acid derivative of ethanol amine. No. 2,316,636. Wilbur O. Teeters to E. I. du Pont de Nemours & Co.

Continuously producing dry hydrogen chloride. No. 2,316,633. Claude H. Smith to Wingfoot Corp.

Condensation product of amine with a terpene halo-alkyl ether. No. 2,316,625. Lyle W. Rothenberger to Hercules Powder Co.

Treating edible oils or fats, to remove undesirable odors or flavors. No. 2,316,621. Herbert Otto Renner to J. R. Short Milling Co.

Preparing sodium ethanol amine formal N-tetracetate. No. 2,316,606. Donald J. Loder and William F. Gresham to E. I. du Pont de Nemours & Company.

1,1-di(carbomethoxymethoxy)-2-methyl propane, (CH3OOCCH2O) aCHCH(CH3)2. No. 2,316,605. Donald J. Loder, William F. Gresham, and Donald B. Killian to E. I. du Pont de Nemours & Co.

Oxidizing a normally liquid aliphatic compound, selected from allyl acetate, allyl chloride, and ethyl crotonate. No. 2,315,604. Donald J. Loder and Ambrose McAlevy to E. I. du Pont de Nemours & Co.

Polymerizing 2-chloro-butadiene-1,3. No. 2,316,598. Ryukichi Kitani, Naoichi Takashima and Hideo Kaneko to General Electric Co.

Manufacture of tungstic acid. No. 2,316,583. Harry W. Highriter and William C. Lilliendahl to Westinghouse Electric & Mfg. Co.

Apparatus for treating rolling oils. No. 2,316,571. Russell P. Dunmire and James A. Camelford to The Buckeye Laboratories Inc.

Humidifying hydrogen with hydroxyacetic acid. No. 2,316,564. Robert F. Cockerill to E. I. du Pont de Nemours & Co.

Catalytic oxidation of ketones. No. 2,316,543. William J. Amend to E. I. du Pont de Nemours & Co.

Sulfonic acids and process of preparing them. No. 2,316,538. Ludwig Orthner and Werner Langbein vested in the Alien Property Custodian.

Polymerizing acetylene to non-benzenoid polymers. No. 2,316,536. Otto Fuchs vested in the Alien Property Custodian.

Liquid phase extraction of glyceride oils and acids. No. 2,316,512. Stephen E. Freeman to Pittsburgh Plate Glass Company.

Tall-oil refining. No. 2,316,499. Joseph N. Borglin to Hercules Powder Co.

Producing flameproof non-sticking transparent, regenerated cellulose sheet. No. 2,316,496. William D. White to E. I. du Pont de Nemours & Co.

Halogenated ethylene polymer. No. 2,316,481. Donald Whittaker to Imperial Chemical Ind. Ltd.

Processing sulfur with which water is present. No. 2,316,673. Dan McDonald.

Production of vinyl crotonate. No. 2,316,472. Karl H. W. Tuerck to The Distillers Co., Ltd.

Preparing acetals of polyvinyl alcohol. No. 2,316,921. Adolf Wellie and Fritz Herrlein to General Aniline & Film Corp.

Tolylethyl butyrate and process for **making same.** No. 2,316,912. Frank J. Suday to The United Gas Improvement.

Electrical semi-conductor of selenium for use in dry rectifiers. Ferdinand Waibel and Erich Nitsche to Westinghouse Electric and Mfg. Co.

Inhibiting catalytic oxidation of a lubricating or electrical oil. No. 2,316,852. Frederic A. Armfield to Shell Development Co.

Manufacture of a sulfo-carboxylic acid. No. 2,316,847. Henry Dreyfus to Celanese Corp. of America.

Preparation of rutile titanium dioxide. No. 2,316,840. Sanford S. Cole to National Lead Co.

Preparation of rutile titanium dioxide. No. 2,316,841. Sanford S. Cole to National Lead Co.

2-hydroxy-alkylamino-5-sulfonbenzoic acid. No. 2,316,809. Pierre Petitcolas and Joseph Frenkiel vested in The Alien Property Custodian.

Re-refining process utilizing adsorption and distillation for a contaminated or used palm oil which contains soluble metallo-organic contaminants. No. 2,316,774. **Russell P. Dunmire and James A.** Camelford to The Buckeye Laboratories, Inc.

Removing weakly acidic sulfur compounds from hydrocarbon liquids. No. 2,316,759. Donald C. Bond to The Pure Oil Company.

Removing weakly acidic substances from substantially neutral organic water-immiscible liquid. No. 2,316,753. George W. Ayers, Jr. and Lawrence M. Henderson to The Pure Oil Company.

Removing acidic constituents from organic liquids. No. 2,317,056. Lawrence M. Henderson and Donald C. Bond to The Pure Oil Company.

Removing organic acidic substances from hydrocarbon fluids. No. 2,317,055. Lawrence M. Henderson, George W. Ayers, Jr. and Donald C. Bond to The Pure Oil Co.

Removing paraffin from a tubing wall. No. 2,317,038. William H. Ellinger.

Making highly adsorptive carbon black having a fast filter rate. No. 2,317,026. Owen J. Brown, Jr. and Walter R. Smith to Godfrey L. Cabot, Inc.

Oil base drilling fluid. No. 2,316,968. George Miller.

Maintaining an oil base drilling fluid substantially free of water during drilling. No. 2,316,967. George Miller.

Removing organic acidic substances from hydrocarbon fluids. No. 2,316,966. Timothy L. McNamara and Lawrence M. Henderson to The Pure Oil Co.

Removing weakly acidic bodies from hydrocarbon fluids. No. 2,316,965. Timothy L. McNamara and Lawrence M. Henderson to The Pure Oil Company.

Treating building materials with amines. No. 2,317,301. Anderson W. Ralston and Robert J. Vander Wal to Armour and Company.

Fibrous material impregnated with a chemical condensation product derived from a molecular weight viscous material. No. 2,317,209. Wilbert B. McCluer, Ralph W. Hufferd and Frank J. Philippbar.

Heat hardenable molding composition urea-formaldehyde-triethanolamine hydrochloride condensation product. No. 2,317,181. Gaetano F. D'Alelio to General Electric Co.

Polymeric iminoether hydrohalides. No. 2,317,155. Donald D. Coffman and Frank C. McGrew to E. I. du Pont de Nemours & Co.

Manufacture of polyvinyl acetate in finely divided form. No. 2,317,149. Theodore R. Lemanski to E. I. du Pont de Nemours & Co.

Granular polymerization of ethanoid monomers. No. 2,317,138. David A. Fletcher to E. I. du Pont de Nemours & Co.

Reaction of hydrocarbon sulfonyl halides with alcohols. No. 2,319,121. Arthur Fox to E. I. du Pont de Nemours & Co.

Stabilized composition of matter, which comprises a monomeric unsaturated carboxylic anhydride of a readily polymerizable acrylic acid devoid of hydrogen on the alpha carbon atom and a stabilizing amount of a polymerization inhibitor. No. 2,319,070. Wesley Lowe and William Kenyon to Eastman Kodak Company.

Decamethylene diisocyanate having a boiling point of 154°-159°C. at 4.5 mm. No. 2,319,057. William Hanford to E. I. du Pont de Nemours & Co.

Improving the cohesion of and for impermeabilizing and consolidating, grounds and other earthy and stony masses and structures. No. 2,319,020. Gerrit van Leeuwen to Shell Development Co.

Treating shaped articles of coagulated protein to render them stable to discoloration and swelling in acid dye baths. No. 2,319,009. Andrew McLean to Imperial Chemical Industries Ltd.

Purification of butadiene. No. 2,318,988. David Craig to The B. F. Goodrich Co.

Production of an asphalt emulsion of the oil-in-water type having a demulsibility above 60 and a viscosity below 55 seconds Saybolt furel at 77°F., from an asphalt which will not emulsify. No. 2,318,932. Robert Dunham to Union Oil Co. of Calif.

Wax having incorporated therein stabilizing amounts of a metal bisulfite-formaldehyde addition compound. No. 2,318,898. Harold Stiegler and John Hood to American Cyanamid Co.

Liquefaction of chlorine. No. 2,318,876. Dwight Means to Pittsburgh Plate Glass Co.

Preparation of copper phthalocyanines. No. 2,318,787. Harold T. Lacey to American Cyanamid Co.

Preparation of copper phthalocyanines. No. 2,318,783. Victor L. King, James W. Foote and Don H. W. Felch to American Cyanamid Co.

Process for treating ricinoleic acid compounds. No. 2,318,762. Gifford D. Davis and Bernard A. Dombrow to National Oil Products Co.

Method of retarding the deterioration of an organic substance which tends to deteriorate by the absorption of oxygen from the air which comprises treating it with the product obtained by reacting indene with a secondary diarylamine containing only secondary amino groups in the presence of a condensation catalyst. No. 2,318,758. David Craig to The B. F. Goodrich Co.

Treatment of gases. No. 2,318,752. Samuel C. Carney to Phillips Petroleum Co.

Refining and concentrating the unsaponifiable fraction of fats and oils. No. 2,318,748. Loran O. Buxton and Eric J. Simons to National Oil Products Co.

Purification of partially oxidized styrene by treating with sodium bisulfite. No. 2,318,742. Edgar C. Britton and Walter J. LeFeyre to The Dow Chemical Co.

Process for making alkylene polyamines which comprises reacting ammonia with a 1,2 alkylene amine. No. 2,318,730. Alexander L. Wilson to Carbide and Carbon Chemicals Corp.

Process for preparing beta-aminoalkyl nitrogen derivatives which comprises reacting a 1,2 alkylene imine with essentially only a non-acylated basic amine having at least one reactive hydrogen atom attached to an amino nitrogen atom. No. 2,318,729. Alexander L. Wilson to Carbide and Carbon Chemicals Corp.

An impregnating and plasticizing composition comprising a fluorinated organic compound boiling above 400°F., in which the fluorinated organic compound contains from 5 to 60% of fluorine. No. 2,318,684. Peter J. Gaylor to Standard Oil Development Co.

Method for making composite materials. No. 2,318,670. Thomas F. Carruthers and William N. Stoops to Carbide and Carbon Chemicals Corp.

Process for producing rubber-like materials from waxes. No. 2,318,669. Donald E. Carr to Union Oil Co. of Calif.

Continuous process of grease making which comprises continuously mixing together proportioned amounts of heated preformed soap stock and a heated oil in a high-speed mixer in which the soap stock and oil are brought into contact with each other in a highly turbulent zone. No. 2,318,668. Austin E. Calkins to Standard Oil Development Co.

Composition and method for treating boiler water to prevent caustic embrittlement. No. 2,318,663. Paul G. Bird, Wilson Evans, Carlyle Harmon and Jorgen Richter Salvesen to Marathon Paper Mills.

Fermentation process for the production of 5-ketogluconic acid. No. 2,318,641. Joseph Stubbs and Lewis Lockwood and Edward Roe and George Ward.

Production of products rich in unsaturated hydrocarbons. No. 2,318,626. Mathias Pier and Ernst Donath.

Production of lubricating oils. No. 2,318,625. Mathias Pier and Friedrich Christmann.

Continuous process of preparing finely divided nitroguanidine. No. 2,318,577. Kenneth Ashley to American Cyanamid Co.

Method of preparing a finely divided organic material for storage. No. 2,318,576. Gerald D. Arnold.

Leather

Tanning. No. 2,313,728. Paul Austin and William Lundquist to E. I. du Pont de Nemours & Co.

Washing and deliming composition for limed hides. No. 2,318,454. Heinrich Bertsch and Friedrich Schmitt to American Hyalsol Corp.

Preparing leather by impregnating untanned skins with an aqueous dispersion of a methylol melamine. No. 2,316,741. William Orville Dawson to American Cyanamid Co.

Preparing leather by impregnating untanned skins with an aqueous dispersion of a methylol melamine and with another tanning agent. No. 2,316,740. William O. Dawson to American Cyanamid Co.

Preparing leather tanning and bleaching agents. No. 2,316,714. Malcolm J. Reider to American Cyanamid Co.

Metals, Alloys

Casting of metal alloys. No. 2,315,876. Vrvil D. Dibil, Edward O. Liebig and Robert St. Clair Low to Baker & Company.

Imparting corrosion resistance in a ferrous metal body by treating with aqueous solution consisting of an inorganic nitrate, water and a wetting agent. No. 2,315,852. Wallace E. Gordon and Joseph E. Williamson to Remington Arms Company, Inc.

Heat treatment of magnesium base alloys. No. 2,314,854. Alfred Brandt to The Anglo California National Bank of San Francisco.

Improving the yield point of cast magnesium base alloys consisting of aluminum from about 2.0% to about 6.0%, tin from about 2.75% to about 10.0%, silver from about 0.1% to about 4.0%, the balance substantially all magnesium. No. 2,314,853. Alfred Brandt to The Anglo California National Bank of San Francisco.

Heat treatment of magnesium base alloys. No. 2,314,852. Alfred Brandt to The Anglo California National Bank of San Francisco.

Treating tinned container stock having thereon a porous oxide film formed at the high temperature incident to the hot tinning of said stock. No. 2,314,818. Willard Cook and Hugh Romine to Carnegie-Illinois Steel Corp.

Desulfurizing carbon coated metals. No. 2,314,816. Joshua Brown, Jr. and Leland Wooten to Bell Telephone Laboratories, Inc.

Investment composition for casting metals and their alloys, containing from 18 to 50% binder, from 82 to 50% cristobalite, and a soluble inorganic nitrate. No. 2,314,626. Robert Neiman to Edmund Steinbock.

Process of producing grooves, pits or depressions in an electrodeposited chromium wearing surface of a wearing member. No. 2,314,604. Henderik Van der Horst to Von der Horst Corporation of America.

Coating a ferrous surface with an aqueous solution containing a dissolved compound of hexavalent chromium and having a tendency to creep when a film thereof is baked on a metal surface. No. 2,314,565. John Thompson to Parker Rust Proof Co.

Forming protective coatings on magnesium and alloys. No. 2,314,341. Robert Buzzard.

Cleaning metal surfaces involving removal of greasy residues by treatment with an alkaline aqueous cleansing compound. No. 2,314,285. Oliver Morgan to Allied Chemical & Dye Corp.

Magnesium base alloy. No. 2,314,024. Carl Topping to The Dow Chemical Co.

Rolling magnesium-base alloys. No. 2,314,010. John McDonald to The Dow Chemical Co.

Coating metals by the aid of acid sulfites. No. 2,313,925. Leo Curtin to Parker Rust-Proof Co.

Electroplating a nickel group metal upon articles of magnesium and magnesium-base alloys. No. 2,313,756. William Loose to The Dow Chemical Co.

Producing protective coatings upon magnesium and its alloys. No. 2,313,755. William Loose to The Dow Chemical Co.

Forming a corrosion-resistant coating on the surface of articles of magnesium and its alloys. No. 2,313,754. William Loose to The Dow Chemical Co.

Producing a protective coating upon articles of magnesium and magnesium-base alloys. No. 2,313,753. William Loose to The Dow Chemical Co.

Cyanidation of gold ores tailings or any other gold bearing material. No. 2,315,187. Thomas Chapman and Verne Winters one-half to said Chapman, and one-half to The Eagle-Picher Mining and Smelting Co.

Welding rod comprising chromium, silicon carbon, the balance being substantially comprised of iron. No. 2,315,466. Joseph Vetter to Natural Products Refining Co.

Low-alloy corrosion-resistant steel. No. 2,315,156. Clifford Larrabee.

Coating metal with a phosphate coating by subjecting the surface of the metal to a phosphate coating solution containing bromate. No. 2,314,887. Herman Lodeesen and Herbert Ward to Parker Rust Proof Co.

Treating pickled metal directly after the pickling thereof to neutralize the adhering acid and inhibit rusting of the metal. No. 22,296. Robert Shoemaker to Agnes J. Reeves Greer.

Nickel plating. No. 2,315,802. Rudolf Lind, William J. Harshaw and Kenneth E. Long to The Harshaw Chemical Co.

Increasing the corrosion resistant characteristics of ferrous base metal articles by electroplating. No. 2,315,740. James M. Schoonmaker, Jr. and Franklin Stockton to Standard Steel Spring Co.

Application of a metal coating of aluminum and magnesium to iron articles. No. 2,315,725. Goran A. Moller.

Silicon brass rod. No. 2,315,700. Frederick H. Hehemann to The Lunkenheimer Company.

Electrolytic solution for use in the anodic polishing of metals and alloys. No. 2,315,696. Charles L. Faust to Battelle Memorial Inst.

Electro-polishing a metal or alloy. No. 2,315,695. Charles L. Faust to Battelle Memorial Inst.

Soluble metal anode cast of a metal selected from the group consisting of brass and copper for use in a cyanide plating bath. No. 2,315,607. Eric W. Ferm and Richard O. Hull to E. I. du Pont de Nemours & Co.

Cleaning the surface of a ferrous metal article. No. 2,315,568. Christian J. Wernlund to E. I. du Pont de Nemours & Co.

Bimetal comprising two metal members that expand at different rates upon heating. No. 2,315,565. Romaine G. Waltenberg to The H. A. Wilson Co.

Alloys having good corrosion resisting properties, containing 2% to 25% manganese, 2% to 20% chromium, 2% to 25% iron, balance substantially all copper. No. 2,315,507. Reginald S. Dean and Clarence T. Anderson to Chicago Development Co.

Manufacturing nickel-molybdenum-iron alloys containing copper as a usual impurity. No. 2,315,497. Joseph H. Brennan to Haynes Stellite Co.

Process of pickling copper or its alloys. No. 2,318,559. John Percival to Monsanto Chemical Co.

Connecting sheet aluminum with a sheet of cellulosic material. No. 2,318,184. Floricel Rojas to Walter Liebman.

Cementing a ferrous metal article with silicon. No. 2,318,011. James Parsons, Jr. and Earl Ryder to The Duriron Co.

Magnesium-Base Alloy. No. 2,317,980. Reginald Dean and Clarence Anderson to Chicago Development Co.

Alloy having a high coefficient of linear expansion, consisting essentially of manganese. No. 2,317,979. Reginald Dean and Clarence Anderson to Chicago Development Co.

Copper wire having a semi-glossy, black, continuous, flexible coating. No. 2,317,811. William Scheiber to General Electric Co.

Production of steel. No. 2,317,793. Peer Nielsen to National Tube Co.

Joining a corrosion resisting metal to magnesium base metal. No. 2,317,510. Robert Barklie and Alkin Lewis.

Welding rod for welding stainless iron or steel including a solid integral member made of iron, and nickel-chromium alloy in powdered form. No. 2,317,421. Nils Tholand.

Concentration of boron chemically combined from its ores by autoflotation. No. 2,317,413. Francis Shelton.

Copper clad wire comprising a ferrous base and an adherent layer of copper. No. 2,317,350. Orville Adler and Maurice Krinowitz to National-Standard Co.

Treating chromite ore containing alumina in a continuous cycle, for the production carbon free chromium, and metallic aluminum. No. 2,316,330. Eugene M. Hawk deceased by Luz M. Hawk vested in Alien Property Custodian.

Chlorination of a tin bearing material which contains a quantity of iron. No. 2,316,275. Irving E. Muskat and Robert H. Taylor to Pittsburgh Plate Glass Company.

Production of iron and steel. No. 2,316,665. Herman A. Brassert and Selwyne Perez to Minerals and Metals Corp.

Apparatus for facilitating and controlling reduction of finely divided ores or other oxides of metals by fluid reagents. No. 2,316,664. Herman A. Brassert and James C. Hartley to Minerals and Metals Corp.

Removing a combination of nickel and chromium coatings from a ferrous composition base. No. 2,316,579. Earl C. Hall to Western Electric Co., Inc.

Electrodepositing iron from a prepared solution of ferrous chloride. No. 2,316,917. Edward H. Wallace and Ralph K. Iler to United States Rubber Co.

Purification of manganese electrolyte solutions. No. 2,316,750. Paul M. Ambrose to Chicago Development Co.

Recovery of molybdenite by froth flotation. No. 2,316,743. Corbin Marsh to American Cyanamid Co.

Producing one-coat enameled iron articles of red and yellow color adequately bonded to the iron. No. 2,317,114. Jacob E. Rosenberg to Homelaya Inc.

Coated metal article and method of making same. No. 2,318,656. John S. Thompson to Parker Rust Proof Co.

Process for prevention of atmospheric corrosion of metal surfaces capable of corrosion, which comprises treating the said surfaces with a long chain amine salt of ortho-phosphoric acid, said long chain being a hydrocarbon chain. No. 2,318,606. Max Goebel and Isaac Walker to E. I. du Pont de Nemours & Company.

In process for electrodeposition of a metal selected from the group consisting of nickel, copper, and lead, the step comprising effecting deposition by passing an electric current through an aqueous electrolyte consisting essentially of the metal cation and the anion-SO_3 NH_2. No. 2,318,592.

Electrical resistor of thermostatic laminated metal. No. 2,317,018. Clarence F. Alban and Stanley R. Hood to W. M. Chace.

Decreasing deleterious effect of aluminum upon the ductility of cast steels. No. 2,316,948. Albert P. Gagnebin to The International Nickel Co., Inc.

Treatment of electrolytes for deposition of manganese. No. 2,316,937. Reginald S. Dean to Chicago Development Co.

Permanent magnet and process of production. No. 2,317,295. Ethan A. Nesbitt to Bell Telephone Laboratories.

Tough non-brittle magnetic article of high permanent magnet properties. No. 2,317,294. Ethan A. Nesbitt to Bell Telephone Laboratories Inc.

Plating tank for electrodeposition of metals on metallic strip. No. 2,317,242. William S. Allen, Richard A. Dimon and Ewart S. Taylerson to Carnegie Illinois Steel Corp.

Coating metal with carbon. No. 2,317,205. Rudolf L. Auburn to Callite Tungsten Corp.

Zinc alloy. No. 2,317,179. John R. Daesen.

Electrodeposition of manganese. No. 2,317,153. Reginald S. Dean to Chicago Development Co.

Aeration of an aqueous mineral-bearing pulp in the presence of a collecting agent to form a froth. No. 2,317,139. Philip M. Frantz to The Colorado Fuel and Iron Corp.

Paints and Pigments

Treatment of lead chromate pigments for increasing their resistance to color deterioration by the action of light. No. 2,316,244. William G. Huckle and Charles G. Polzer to Imperial Paper and Color Corp.

Paint composition comprising an intimate mixture of Portland cement, linseed oil, and a suspension medium consisting of magnesium carbonate. No. 2,316,585. Leslie J. Howlett and Wesley H. Howlett.

Producing colloidal pigment material dispersing a pigment in a liquid polyhydric alcohol. No. 2,316,535. Georg Bohner, Bruno Wendt and John Eggert vested in Alien Property Custodian.

Paper and Pulp

Process of manufacturing paper and board. No. 2,315,892. Levis M. Booth, by Alice Lippincott.

Preparing a homogeneous highly permeable derivative wood pulp. No. 2,314,658. Fredrich Olsen to The Cellulose Research Corp.

Process for making lignin. No. 22,295. Edgar Olson and Richard Plow to Northwood Chemical Co.

Sheet of paper, impregnated with petrolatum and having a paraffin wax coating overlying the petrolatum impregnated sheet. No. 2,319,116. Lloyd Dodge to Rhinelander Paper Company.

Treatment of black liquor from the sulfate process of paper pulp manufacture for the purpose of rendering said black liquor relatively innocuous and suitable for discharge into natural waters. No. 2,318,919. Charles Brockman.

Petroleum

Treating a crude toluene cut containing toluene and paraffine hydrocarbons. No. 2,316,126. Richard D. Geckler and Nathan Fragen to Standard Oil Co. (Corp. of Ind.)

Removing mercaptans from petroleum fractions. No. 2,316,092. Vernon J. Loyd to Socony-Vacuum Oil Co., Inc.

Stabilizing the color of a refined substantially colorless light petroleum oil product. No. 2,315,957. Amiot P. Hewlett to Standard Oil Development Co.

Producing a stabilized heavy fuel oil from a pressure still tar of petroleum. No. 2,315,935. William C. Child to Standard Oil Development Co.

Producing an isopentane fraction. No. 2,315,875. Walter A. Schulze and Lloyd C. Morris to Phillips Petroleum Company.

Forming aromatic hydrocarbons. No. 2,315,839. Robert E. Burk and Everett C. Hughes to The Standard Oil Company.

Sweetening sour hydrocarbon oils relatively unstable with respect to color and gum formation. No. 2,315,820. Walter A. Schulze and Albert W. Buell to Phillips Petroleum Co.

Producing saturated hydrocarbons boiling in the gasoline range and of high anti-knock value. o. 2,314,460. Raymond Schaad to Universal Oil Products Co.

Conversion of low boiling olefins into higher boiling hydrocarbons of predetermined boiling range. No. 2,314,458. Eldon Stahly and Frank Johnson to Standard Oil Development Co.

Production of a dimer by the polymerization of a normally gaseous monomeric olefin. No. 2,314,457. Bruno Roetheli and Mervin Conn to Standard Oil Development Co.

Refining of petroleum oil. No. 2,314,446. Robert Ferguson to Standard Oil Development Co.

Producing gasoline from a butane fraction containing isobutane and normal butane. No. 2,314,435. Samuel Allender to Universal Oil Products Co.

Suppressing catalytic action of metal compounds on gum formation in hydrocarbon distillate which comprises adding to the distillate a polyhydroxybenzalaminophenol. No. 2,314,388. Joseph Chenicek to Universal Oil Products Co.

Producing derivatives of paraffin hydrocarbons. No. 2,314,385. Frederick Frey to Phillips Petroleum Co.

Alkylating a paraffin with an olefin. No. 2,314,333. Alfred Francis to Socony-Vacuum Oil Co., Inc.

Isomerizing normal paraffin hydrocarbons to isoparaffins. No. 2,314,297. Claude Watson to The Texas Co.

Purifying normally gaseous hydrocarbons. No. 2,314,217. Herschel Hyde, Clare Viland, and Lionel Galstaun to Tide Water Associated Oil Co.

Improved Diesel fuel having in admixture therewith from about 0.1% to about 5% of an organic hydroxylamine. No. 2,314,137. Everett Fuller and Edwin Nygaard to Socony-Vacuum Oil Co., Inc.

Non-photosensitive asphalt comprising a mixture of a relatively photosensitive asphalt and an organic aliphatic inhibitor of photo-oxidation. No. 2,314,124. Donald Carr and Harold Ritchey to Union Oil Company of California.

Conversion of normally gaseous hydrocarbons into normally liquid hydrocarbons. No. 2,314,040. Frederick Frey to Phillips Petroleum Co.

Bituminous composition of a mineral hydrophilic substance and free from added saponifiable and saponified material. No. 2,313,759. Paul McCoy to American Bitumuls Co.

Purifying hydrogen of light hydrocarbon impurities. No. 2,315,424. Luther Hill, Gregory Vincent and Everett Howard to The M. W. Kellogg Co.

Removing weakly acid organic substances from hydrocarbon liquids. No. 2,315,384. George Ayers, Jr., Donald Bond and Lawrence Henderson to The Pure Oil Co.

Manufacture of saturated liquid hydrocarbons of high antiknock value. No. 2,315,197. Arthur Goldsby and Karl Korpi to The Texas Co.

Catalytic cracking of hydrocarbons. No. 2,315,192. Gustav Egloff to Universal Oil Products Co.

Recovering organic neutral substances containing oxygen from oils containing such substances. No. 2,315,182. Rudolf Bemmann.

Improving hydrocarbon oil of relatively high sulfur content. No. 2,315,144. Kenneth Watson to Universal Oil Products Co.

Separating a hydrocarbon oil into fractions having different properties. No. 2,315,131. Stanislaw Pilat and Marian Godlewicz to Shell Development Co.

Alkylating paraffins with olefins. No. 2,315,129. Arlie O'Kelly and Robert Work to Socony-Vacuum Oil Co., Inc.

Catalytic dehydrogenation of hydrocarbon vapors. No. 2,315,107. James Chickinoff and Robert Roberts and James Burgin to Shell Development Co.

Polymerization of olefins to form viscous hydrocarbons. No. 2,315,080. James Reid to Phillips Petroleum Co.

Production of color stable waxes from crude slack wax. No. 2,315,077. Reuben Pfennig and Claude Davis to Standard Oil Development Co.

Addition agent for lubricating oils. No. 2,315,063. Eugene Lieber to Standard Oil Development Co.

Segregation of relatively more aromatic type constituents from relatively more paraffinic type constituents. No. 2,315,057. August Holmes and Henry Hibshman to Standard Oil Development Co.

Continuous process of dewaxing mineral oils. No. 2,314,994. Shelby Lawson and Robert Henry to Phillips Petroleum Co.

Refining sour hydrocarbon distillates. No. 2,315,766. Lawson E. Border to Shell Development Co.

Subjecting hydrocarbon oil having a high sulfur content to thermal conversion by exposure to elevated temperatures in the range at which higher boiling hydrocarbons undergo conversion into lower boiling hydrocarbons. No. 2,315,738. William JP. Ryan and Marcus T. Kendall to The Texas Company.

Removal of carbonyl sulfide from hydrocarbon fluids essentially free of hydrogen sulfide and mercaptans. No. 2,315,662. Walter A. Schulze, Armas A. Ruoho and Graham H. Short Bartlesville to Phillips Petroleum Co.

Addition agent for hydrocarbon oils comprising an ester of phosphorous acid. No. 2,315,544. Raymond Reutter to The Atlantic Refining Co.

Phosphorus sulfide hydrocarbon reaction product. No. 2,315,529. Charles D. Kelso to Standard Oil Co.

Removing mercaptans from petroleum fractions. No. 2,315,530. Vernon J. Loyd to Socony-Vacuum Oil Co.

Catalytically treating and stabilizing a hydrocarbon fuel boiling within the range of gasoline. No. 2,315,506. Philip S. Danner and Robert C. Mithoff to Standard Oil Co. of Calif. (Corp. of Del.)

Production of paraffin-olefin mixtures. No. 2,315,499. Adolf Cantzler and Hans Krekeler to Standard Catalytic Co.

Refining a hydrocarbon oil to reduce the sulfur content. No. 2,318,495. Warren Johnstone to Universal Oil Products Co.

Stabilizing hydrocarbon distillates, normally tending to form gum. No. 2,318,196. Joseph Chenicek, to Universal Oil Products Co.

Production of isobutane. No. 2,318,226. Vladimir Ipatieff and Herman Pines, to Universal Oil Products Co.

Production of isobutane. No. 2,318,225. Vladimir Ipatieff and Herman Pines to Universal Oil Products Co.

Compression ignition motor fuel. No. 2,317,968. Thomas Schultz and Irving Levine and Homer Wellman to Standard Oil Co. of Calif.

Conversion of hydrocarbons. No. 2,317,901. Frederick Frey to Phillips Petroleum Co.

Polymerizing liquefied isobutylene to form high molecular weight polymers. No. 2,317,878. Lewis Bannon to Jasco, Inc.

Polymerization of isobutylene containing material at low temperatures. No. 2,317,868. Luther Turner to Jasco, Inc.

Cracking hydrocarbon oil. No. 2,317,803. Edward Reeves and Kenneth Kearby to Standard Oil Development Co.

Removal of mercaptan compounds from petroleum oils, utilizing an alkaline solution. No. 2,317,770. Frederic Holloway and Durward Wilkes to Standard Oil Development Co.

Production of motor fuels having high anti-knocking characteristics. No. 2,317,766. Amiot Hewlett and Gerald Phillips to Standard Oil Development Co.

Manufacture of gasoline-like hydrocarbons of high anti-knock value from normally gaseous hydrocarbons. No. 2,317,603. Eric Hjerpe and William Gruse to Gulf Oil Corp.

Sweetening low boiling petroleum distillates containing mercaptans. No. 2,317,600. Wayne Benedict to Universal Oil Products Co.

Subjecting hydrocarbon oil to conversion in a reaction zone in the presence of a cracking catalyst. No. 2,317,494. Charles Thomas to Universal Oil Products Co.

Catalytic conversion of hydrocarbons. No. 2,317,379. Charles Hemminger to Standard Oil Development Co.

Conversion of hydrocarbon oils heavier than gasoline. No. 2,316,260. Edward C. Lee and Jacob Elston Ahlberg to Universal Oil Products Co.

Isomerication of paraffin hydrocarbons to produce therefrom substantial yields of compounds more highly branched than the materials subjected to treatment. No. 2,316,246. Vladimir N. Ipatieff and Herman Pines to Universal Oil Products Company .

Isomerization of paraffin hydrocarbons to produce substantial yields of compounds more highly branched than the materials subjected to treatment. No. 2,316,247. Vladimir N. Ipatieff and Herman Pines to Universal Oil Products Co.

Petroleum hydrocarbon oil stabilized against oxidation with from 0.01 to 1.0 per cent by weight of diphenyl piperazine. No. 2,316,587. Sin-Iti Irigai to General Electric Co.

Improved lubricating oil comprising a mineral lubricating oil containing an allophanate. No. 2,316,903. Paul R. Van Ess and Ellis R. White to Shell Development Co.

Improved mineral oil composition comprising a viscous alkyl-substituted aromatic-aliphatic carboxylic acid. No. 2,315,889. Orland M. Reiff, Ferdinand P. Otto and John J. Giammaria and Edward A. Oberright to Socony-Vacuum Oil Co., Inc.

Separation of mixtures of olefins and paraffins. No. 2,316,860. Henri M. Guinot vested in the Alien Property Custodian.

Production of more valuable products from normal paraffins and olefins. No. 2,316,775. Gustav Egloff to Universal Oil Products Company.

Utilization of high pressure refinery gases to produce cooled fluids for heat extraction uses in refinery processing. No. 2,316,744. Dana S. Mellett and Geoffrey W. Robbins to Socony Vacuum Oil Co., Inc.

Removing mercaptans from petroleum oils. No. 2,317,054. Lawrence M. Henderson and George W. Ayers, Jr. to The Pure Oil Co.

Breaking petroleum emulsions. No. 2,317,150. Paul M. Goodloe and Henry G. Berger to Socony-Vacuum Oil Co., Inc.

Refining petroleum hydrocarbons. No. 2,316,954. William T. Hancock to Hancock Oil Co. of Calif.

Converting corrosive petroleum oils by the use of lime wherein the direct heating of the lime with the oil by firing is avoided. No. 2,316,931. David G. Brandt to Cities Service Oil Co.

Isomerizing normal butane to isobutane. No. 2,317,241. William A. Ackerman and William S. Bonnell to Gulf Research & Development Co.

Manufacturing asphalts wherein a precipitated asphalt is oxidized and blended with a flux. No. 2,317,150. Lawrence L. Lovell and Donald C. Isted and Roman L. Ortynsky to Shell Development Co.

Manufacture of aviation gasoline of high anti-knock rating. No. 2,317,142. Arthur R. Goldsby to The Texas Company.

Mineral oil composition. No. 2,319,190. Orland Reiff to Socony-Vacuum Oil Co., Inc.

Improved mineral oil composition comprising a mineral oil having admixed therewith an oil-miscible condensation product characterized by at least two aromatic nuclei. No. 2,319,189. Orland Reiff to Socony-Vacuum Oil Co. Inc.

Removing salt from petroleum oils. No. 2,319,188. Dana Mellett to Socony-Vacuum Oil Co. Inc.

Reacting perchloromethyl mercaptan with an unsaturated organic material, said reaction product containing chlorine and sulfur. No. 2,319,183. Darwin Badertscher and Henry Berger and Francis Seger to Socony-Vacuum Oil Company.

Treatment of hydrocarbons. No. 2,318,781. Vladimir N. Ipatieff and Herman Pines to Universal Oil Products Co.

Treatment of hydrocarbons. No. 2,318,765. Gustav Egloff to Universal Oil Products Co.

Method for polymerizing olefins to lubricating oils. No. 2,318,719. Helmuth G. Schneider and Lewis A. Bannon to Standard Oil Development Co.

Process for separation of petroleum from "oil-in-water" emulsions of crude oil and brine which comprises adding to the emulsion a small amount of aluminum chloride. No. 2,318,714. Harold J. Robertson and Thomas G. Wisherd to Sinclair Refining Co.

Process of suppressing the formation of gum in cracked, polymerized, and other pytolytic gasolines intended for use as fuel for an internal combustion engine and of the type tending to deposit gum during storage. No. 2,318,710. Albert A. Persyn to Tide Water Associated Oil Co.

Synthesis of hydrocarbons. No. 2,318,602. Franz Duftschmid, Heidelberg, and Eduard Linch and Fritz Winkler, to Standard Catalytic Co.

Process of refining hydrocarbon oils. No. 2,318,582. Carl Berger to Glove Oil and Refining Co.

Resins, Plastics

Linoleum-like floor and wall coverings comprising a fibrous base having firmly attached thereto a tough resinous layer of plastic mass. No. 2,316,099. Frederick J. Myers to The Resinous Prods. & Chemical Co.

Process for producing sulfur dioxide-olefin resins. No. 2,314,067. Maxwell Barnett and John Brown, Jr. to Freeport Sulphur Co.

Resinifying lignocellulosic materials. No. 2,313,953. William Longborough.

Refining of rosin esters. No. 2,313,901. William Taylor to Hercules Powder Co.

Producing a low temperature phenol-formaldehyde resin. No. 2,315,432. Edward Kropa to American Cyanamid Co.

Resinous composition. No. 2,315,400. Gaetano D'Alelio to General Electric Co.

Preparation of phenol-urea-formaldehyde resins. No. 2,315,087. Pierre Cuvier.

Chlorination of propylene polymers to give resins. No. 2,315,037. Lewis Bannon to Jasco, Inc.

Preparing a plastic and recovering caffeine from coffee. No. 2,315,005. Herbert Polin.

Treating a surface composed primarily of plastic crylic resins. No. 2,314,975. David Ford to Oliver E. Crocker.

Polyester resin from phthalic anhydride pentaerythritol and soya bean oil. No. 2,315,708. Almon G. Hovey and Theodore S. Hodgins and Charles J. Meeske to Reichhold Chemicals, Inc.

Process of beater-sizing with resins and waxes. No. 2,315,675. Ernst Thommsdorff to Rohm and Haas Co.

Molding resin composition capable of hardening upon heating to a temperature below 300 degrees F. and thereby yielding an article having combined hardness, toughness and impact properties. No. 2,315,503. Walter S. Crowell and George W. Birch to The S. S. White Dental Mfg. Co.

Producing resinous reliefs or resinous resists. No. 2,318,322. Charles Edmound Meulendyke.

Styrene-polypiperylene copolymer resin. No. 2,317,859. Frank Soday to The United Gas Improvement Co.

Styrene-polybutadiene copolymer resin. No. 2,317,858. Frank Soday to The United Gas Improvement Co.

Polymerized styrene-polyisoprene resin product. No. 2,317,857. Frank Soday to The United Gas Improvement Co.

Resinous reaction products of one polyhydric alcohol and the clear, amber-colored, viscous residue containing long-chained polycarboxylic acids. No. 2,317,668. Harold Cheetham and Charles Levesque to The Resinous Products & Chemical Co.

Relieving the stresses from lengths of anisotropic thermoplastic material. No. 2,317,409. John Seaton to The B. F. Goodrich Co.

Casein plastics comprising casein and a glycerol ester of levulinic acid. No. 2,315,146. Frederick W. Adams and William H. Lycan to Pittsburgh Plate Glass Co.

Normally solid, thermoplastic composition capable of fusing under heat. No. 2,316,371. Corneille O. Strother to Carbide and Carbon Chemicals Corp.

Production of granules of plastic material suitable for molding. No. 2,316,283. Rene P. Pioeroux and Dimitri G. Soussloff to Celanese Corp. of America.

Plastic compositions containing polyisobutylene. No. 2,316,706. Martin Mueller-Cunradi and Walter Daniel to Jasco, Inc.

Polymerizable unsaturated methylene compound and resin comprising polymers thereof. No. 2,317,130. Loring Coes, Jr. and Carl E. Barnes to E. I. du Pont de Nemours & Co.

Preparing resins comprising reacting cashew nut shell liquid with an aldehyde. No. 2,317,116. John L. Sheridan to Custodis Construction Co., Inc.

Preparing a polystyrene plastic characterized by a nacreous sheen. No. 2,317,137. David A. Fletcher to E. I. du Pont de Nemours & Co.

Molded article made of a resinlike substance comprising essentially a raw thermoplastic comminuted nut shell material consolidated by thermoplastic flow. No. 2,319,182. Edward Van de Pyl to Agicide Laboratories, Inc.

Heating together terpin hydrate and plastic polymerized isobutene sufficiently to cause evolution of water vapor. No. 2,319,164. Chester Snyder to Liatex Corp.

Preparation of a phenol-formaldehyde resin composition which is convertible into a hard infusible insoluble product upon the mixing of two components, one component being the phenol-formaldehyde resin and the other being an acid-hardening agent. No. 2,319,142. Hans Lebach to Haveg Corp.

Continuous process of making particles of organic thermoplastic compositions adapted for use in injection and extrusion molding operations without producing fines. No. 2,319,040. Frederick Conklin to Eastman Kodak Co.

Making an oil midified alkyd resin. No. 2,319,022. William Waldie to New Wrinkle, Inc.

Rubber

Production of nonsticking rubber powder. No. 2,315,924. Simon H. Bertram vested in Alien Property Custodian.

Mixing rubber with a relatively large amount of carbon black, and a small amount of a di (primary) amine. No. 2,315,857. Louis H. Howland to United States Rubber Co.

Mixing rubber with a relatively large amount of carbon black, and a small amount of a para-quinone oxime compound comprising the group—O—N=A=, wherein N is nitrogen, O is oxygen, and A is any quinonoid nucleus. No. 2,315,856. Louis H. Howland to United States Rubber Co.

Mixing rubber with a relatively large amount of a rubber reinforcing black, and an aromatic nitroso compound. No. 2,315,855. Louis H. Howland to United States Rubber Co.

Mixing rubber with a relatively large amount of carbon black and a small amount of hydrazine. No. 2,315,850. Roscoe H. Gerke to United States Rubber Co.

Mixing rubber with a relatively large amount of carbon black and a poly-amido derivative of carbonic acid containing at least one primary amido group. No. 2,315,849. Roscoe H. Gerke to United States Rubber Co.

Age resistor for rubber compositions. No. 2,313,945. Henry Kellog and Irving Lightbows to Jasco, Inc.

Making perforate latex rubber films with or without textile fabric backings. No. 22,290. Merwyn Teague and Paul Teague to United States Rubber Co.

Improving the adhesion of natural and synthetic organic fibers to rubber. No. 2,314,998. Edward Lessig and Hal Headley to The B. F. Goodrich Co.

Improving the adhesion of rubber to cotton. No. 2,314,997. Edward Lessig and Hal Headley to The B. F. Goodrich Co.

Vulcanization accelerators an N-substituted thio-carbamyl sulfamine. No. 2,318,482. Roy Hanslick to United States Rubber Co.

Reinforced rubber article having imbedded therein, a reinforcing element consisting of several untwisted viscose threads. No. 2,318,457. Aleidus Bouhuys to American Enka Corp.

Reclaiming of rubber from waste rubber. No. 2,317,491. Haig Solakian.

Vulcanizing a rubber in the presence of fatty acids and their zinc salts, zinc oxide, not over 1% of available sulfur and a mixture of accelerators. No. 2,317,463. Paul Jones to The B. F. Goodrich Co.

Plasticization of synthetic rubberlike materials. No. 2,317,385. Albert Koch and Erich Gartner to Jasco Inc.

Plasticized compound which comprises chlorinated rubber and an ester of tri-carballylic acid. No. 2,317,380. Edward Higgins, fifty percent of Maximallin C. Meyer.

Vulcanizing rubber in the presence of a 2-mercaptothiazoline and a fatty acid. No. 22,300. Paul C. Jones and Roger A. Mathes to the B. F. Goodrich Company.

Method of plasticizing synthetic rubber. No. 2,316,949. Benjamin S. Garvey to The B. F. Goodrich Co.

Converting sponge rubber compound and non-blowable unvulcanized rubber into uniformly vulcanized sponge rubber having at least a partial skin of solid rubber bonded thereto. No. 2,319,042. Rudolf De Wyk, Jr. to The Sponge Rubber Products Co.

Method of preserving latex and product thereof. No. 2,318,813. William D. Steward to The B. F. Goodrich Co.

Process of vulcanizing rubber. No. 2,318,746. Theodore A. Bulifant to Allied Chemical & Dye Corp.

Rubber compounding. No. 2,318,745. Theodore A. Bulifant to Allied Chemical & Dye Corp.

Deposited latex article. No. 2,318,657. Robert O. Alexander to United States Rubber Co.

Textiles

Producing finishes on textile materials. No. 2,316,057. Arnold Doser and Otto Bayer and Karl Kintzmann to General Aniline & Film Corp.

Imparting to the surface of fabrics a wash-resistant glazed finish. No. 2,314,277. Ira Hurd to Rohm & Haas Co.

Treating textile fiber for purpose of modifying the surface characteristics. No. 2,313,742. Max Engelmann and Josef Pikl to E. I. du Pont de Nemours & Co.

Composition for the preliminary treatment of textile fibers comprising a sulfonated ester of an aliphatic dibasic acid, butyl alcohol and a fungicide. No. 2,315,405. Charles Dulken.

Cuprammonium cellulose stretch spinning. No. 2,315,224. Alfred Reichle and Ludwig Mehler.

Making textile fabrics water repellent without seriously lowering the tensile strength. No. 2,315,135. John Rust to Ellis-Foster Co.

Production of fabrics presenting ornamental effects, which comprises locally applying a water-soluble polyvinyl alcohol resin resist coating to a fabric containing yarn of an organic derivative of cellulose. No. 2,315,002. Arthur Lyem to Celanese Corp. of America.

Process of impregnating textile materials and the material thus obtained. No. 2,314,968. Herbert Bestian and Georg von Finck to General Aniline & Film Corp.

Preventing the dulling of high lights in moire patterns on fabrics containing filaments having a basis of cellulose acetate. No. 2,315,600. Cyril M. Croft to Celanese Corp. of America.

Producing high strength and crimped staple fibers from viscose. No. 2,315,560. Johann J. Stoeckly, Teltow-Seehof, and Wolfgang Linnhoff to North American Rayon Corp.

Process of spinning viscose. No. 2,315,559. Johann J. Stoeckly and Wolfgang Linnhoff to North American Rayon Corp.

Treating cellulosic textile material to remove the impurities and surface fuzz. No. 2,315,545. Eric O. Ridgway to Ridbo Laboratories Inc.

Improving the dyeing properties of cellulose textile material. No. 2,318,464. Walter Cameron and Thomas Morton to Courtaulds Ltd.

Sizing synthetic linear polyamide textiles. No. 2,317,728. John Bristol to E. I. du Pont de Nemours & Co.

Imparting a permanent water repellent finish to a textile. No. 2,317,499. William Trowell to Hercules Powder Co.

Producing pattern effects on textile material consisting of cellulose fibers and fibers of cellulose derivatives. No. 2,317,466. Max Kerth and Alfred Link to General Aniline & Film Corp.

Coloring and decorating textiles. No. 2,317,359. Norman Cassel to Interchemical Corp.

Removing deleterious deposits from textile material washed in hard water. No. 2,316,379. Erhart Wolter to The Procter and Gamble Co.

Production of patterned textile materials of an organic derivative of cellulose. No. 2,316,277. Henry C. Olpin and William McKnight to Celanese Corp. of America.

Alginic textile fibers bringing the alginic fibers into the condition in which the alginic radical is combined with chromium so that the product is resistant to alkali. No. 2,319,168. John Speakman to Cefoil Ltd.

Manufacturing coated fabrics, which comprises applying to a fabric coated with a composition comprising halogenated solid polythenes at least one cementing coat comprising a resin compatible both with halogenated polythenes and with nitrocellulose, and thereafter applying at least coat of pigmented nitrocellulose composition. No. 2,319,074. John McGill to Imperial Chemical Industries.

Process for the production of artificial filaments, threads, yarns, films, foils and like shaped articles, which comprises shaping a solution of a highhly polymeric fibre or film-forming polyamide in a phenolic solvent, and setting it in an organic liquid medium. No. 2,318,704. Robert W. Moncrieff and Charles W. Sammons to Celanese Corp. of America.

Process for the production of artificial textile and like shaped materials, which comprises shaping a fused composition comprising a synthetic thermoplastic fibre- or film-forming polyamide. No. 2,318,679. Henry Dreyfus to Celanese Corp. of America.

Abstracts of Foreign Patents

Collected from Original Sources and Edited

Those making use of this summary should keep in mind the following facts:

Belgian and Canadian patents are not printed. Photostats of the former and certified typewritten copies of the latter may be obtained from the respective Patent Offices.

English *Complete Specifications Accepted* and French patents are printed, and copies may be obtained from the respective Patent Offices.

In spite of present conditions, copies of all patents reported are obtainable, and will be supplied at reasonable cost.

This digest presents the latest available data, but reflects the usual delays in transportation and printing. Your comments and criticisms will be appreciated.

CANADIAN PATENTS

Granted and Published December 15, 1942 (Cont'd).

Gypsum plaster stabilized as to its setting time against adventitious accelerating and retarding influences. No. 409,326. Canadian Gypsum Company Limited. (George L. Hann).

Producing 1.1'-dithio-bis-arylene-thiozole by reacting at an elevated temperature upon an aqueous suspension of a 1-mercapto-arylene-thiozole with chromic acid. No. 409,332. Dominion Rubber Company Limited. (William E. Messer).

Making a lacquer coated vulcanized rubber product by coating the rubber with lacquer and conjointly making the lacquer and vulcanized rubber, and counteracting the lacquer retardation of the rubber cure by incorporating rubber vulcanization materials including substantial quantities of sulfur and rubber vulcanization accelerator in the lacquer before coating. No. 409,333. Dominion Rubber Company Limited. (Paul L. Bush and Dale E. Lovell).

Preparing 1,1¹ dithio-bis-arylene-thiazoles by oxidizing in the cold an alcoholic solution of an arylene thiazyl sulfide which is soluble either in alcohol or alcoholic sodium hydroxide, by introducing into the cooled alcoholic solution chlorine gas. No. 409,334. Dominion Rubber Company Limited. (William E. Messer).

Multiple plate laminated glass comprising glass plates connected by plastic layers in which both the thickness of the glass and of the plastic is varied in successive plates and layers. No. 409,335. Duplate Safety Glass Company of Canada Limited. (Ronald E. Richardson).

Producing progressively burning smokeless powder of high potential energy by forming a nitrocellulose base grain, coating it with a moderant, and then adding an explosive liquid nitric ester to the coated grain while maintaining the grain in a waater suspension. No. 409,336. E. I. du Pont de Nemours & Co., Inc. (Walter P. Regestein).

Glass fibre which contains in its composition at least 4% of lead calculated as PbO, at least some of which is in a reduced condition and which appears from gray to black. No. 409,341. Fiberglas Canada Limited. (Harrison P. Hood).

Removing water of hydration from hydrated lime without reducing the volume thereof to produce a dry lime powder. No. 409,357. Marble Cliff Quarries Company. (Russell S. Rarey and Edmund C. Powers).

Method of processing a substantially solid resinous body composed of a synthetic linear condensation polymer capable of being drawn into relatively pliable strong fibres showing by characteristic X-ray patterns orientation along the fiber axis. No. 409,358. The Mathieson Alkali Works. (Archie L. Dubeau, James Douglas McMahon and George P. Vincent).

Synthetic resin comprising methyl methacrylate interpolymerized with methyl isopropenyl ketone. No. 409,376. Shell Development Company. (Clyve Allen).

Paving composition coated with a water-soluble salt of lead and bonded with an asphalt containing a wetting agent. No. 409,377. Standard Oil Development Company. (Charles Mack).

Material for making vulcanized rubber articles comprising a shaped rubber composition having embedded therein a fabric the weft yarns of which comprise fusible polyvinyl resin that becomes ineffective at vulcanization temperature. No. 409,395. Camille Dreyfus. (George Schneider).

Process for cutting fabric containing yarns of filaments or fibres of non-thermoplastic material. No. 409,396. Camille Dreyfus. (Frederick G. Dodge).

Granted and Published December 22, 1942.

Insulating and heat retention unit including a molded mass embodying by weight one-third asbestos cement, one-third rock wool, and one-third silica of soda. No. 409,416. Harry E. Lutton.

Process for the reduction of magnesium. No. 409,428. Alloy Processes Limited. (Henri Louis Gentil).

Increasing the wet strength of paper by treating it with a solution containing an aminotriazine-aldehyde condensation product. No. 409,429. American Cyanamid Company. (Raymond P. Hofferbert).

Core oil comprising a marine oil fatty acid composition not less than 40% C_{22} fatty acid radicals in a concentration substantially greater than in a normal fatty acid mixture of hydrolyzed marine oil. No. 409,430. Armour and Company. (Madison L. Sheely).

Process of removing fatty acids from linseed oil. No. 409,432. The Baker Castor Oil Company. (Ivor M. Colbert).

Copper wire having a smooth, glossy, continuous, flexible coating tightly adhering therete comprising a superpolyamide modified with 10 to 40% by weight of shellac based on the superpolyamide. No. 409,444. Canadian General Electric Company Limited. (Winton I. Patnode and William J. Scheiber).

Cellulosic textile materials sized with an aqueous liquid containing from about 0.5 to about 5% by weight of a water-soluble salt of an interpolymer consisting of methacrylic acid and an alkyl methacrylate having not more than four carbon atoms in the alkyl group. No. 409,455. Canadian Industries Limited. (Merlin M. Brubaker).

Process for the manufacture of water-soluble interpolymers of methacrylic acid. No. 409,456. Canadian Industries Limited. (Leo P. Hubbuch).

Double-base propellant powder comprising rounded masses including nitroglycerin and aggregations of lamellar fragments of nitrated regenerated cellulose sheet material. No. 409,457. Canadian Industries Limited. (Edward Whitforth and Thomas Thomson).

Process for preparing polyvinyl acetal resin. No. 409,459. Canadian Kodak Company, Ltd. (Gustave Bryant Bachman).

Process for preparing polyvinyl acetal resin. No. 409,460. Canadian Kodak Company, Ltd. (Martti Salo).

Process of preparing a polyvinyl acetal resin. No. 409,461. Canadian Kodak Company, Ltd. (Donald R. Swan).

Polyvinyl saturated aliphatic aldehyde acetal resin in which at least a part of the acetal linkages are formed from saturated aliphatic aldehyde acetal groups having not more than two halogen atoms in the alpha position. No. 409,462. Canadian Kodak Company, Ltd. (Donald R. Swan).

Separating a polyvinyl acetal resin containing less than 20% polyvinyl acetate and insufficient polyvinyl alcohol to cause solubility in water, from its reaction mixture, by pouring the reaction mixture into a precipitating amount of agitated water containing approximately 10-25% of acetic acid. No. 409,463. Canadian Kodak Company, Ltd. (Charles R. Fordyce).

Non-corrosive anti-freeze liquid comprising an alcohol containing alkaline material therein in an amount sufficient to impart an alkalinity normally corrosive to solder and aluminum and greater than a pH value of 10, and a separate corrosion preventive for solder and aluminum. No. 409,465. Carbide and Carbon Chemicals Limited. ((Headlee Lamprey).

Process of coating articles with a vinyl resin coating having the same characteristics of a vinyl resin resulting from the conjoint polymerization of vinyl chloride with vinyl acetate containing from about 70 to about 95% by weight of vinyl chloride. No. 409,466. Carbide and Carbon Chemicals Limited. (Carl W. Patton).

Treating nickel-base alloy containing 10% to 40% molybdenum by heating after full annealing at a temperature between 900°-1175°C for about 2-72 hours. No. 409,480. Haynes Stellite Company. (Frank S. Badger, Jr.).

Rolled, optically figured, and polished parabolic searchlight mirror. No. 409,481. Haynes Stellite Company. (Albert V. Harris).

Electropolishing apparatus for electrotreating preformed structural members and the like. No. 409,482. The Himmel Brothers Company. (Folsom E. Drummond and David E. Bench).

Treating livers by removing excess blood from fresh livers, placing them in forms, wiping the exposed surface to assure a uniform thin film of blood coating the exposed surface of the livers and freezing the livers. No. 409,483. Industrial Patents Corporation. (Verl A. Wise, Stanley B. Duffies, Grover R. Henney and Carl L. Lohner).

Increasing the life of a paper making wool felt by treatment with a metallic hydrous oxide hydrosol, the metal group of said oxide being selected from the group consisting of aluminum and chromium. No. 409,484. The Institute of Paper Chemistry. (Douglas Fronmuller).

Sparkplug electrode consisting of platinum-molybdenum alloy containing molybdenum within the range 0.5-10%, the balance being platinum. No. 409,487. Johnson, Matthey & Co. Limited. (Jack C. Chaston and Kenneth S. G. Pertwee).

Recovering a substantially pure aqueous hypochlorous acid solution from an aqueous solution containing the hypochlorous acid and sodium chloride. No. 409,511. Shell Development Company. (Chester C. Crawford and Theodore W. Evans).

Increasing the fermentation rate of the saccharides maltose and glactose by effecting the fermentation by yeast in an aqueous solution in contact with an ambient atmosphere containing oxygen in an amount greater than that in air, whereby the initial fermentation rate is accelerated. No. 409,514. Standard Brands, Incorporated. (Alfred S. Schultz, Lawrence Atkins and Charles N. Frey).

Casting belt for casting benzene and ethylene dichloride solutions of film-forming materials, comprising a casting surface composed essentially of polyvinyl alcohol. No. 409,532. Wingfoot Corporation. (Albert M. Clifford).

Treatment of gas mixtures containing sulfur by passing the gases at elevated temperatures in contact with a catalyst mixture con-

sisting of zinc oxide in admixture with ferric oxide or chromic oxide. No. 409,543. Henry Dreyfus. (Henry W. Groombridge and Ronald Page).

Apparatus for applying coatings to electrically non-conducting sheet material. No. 409,545. Minnesota Mining & Manufacturing Company. (James S. Smyser).

Process for the preparation of a sol of titanium dioxide possessing nucleating properties with respect to the hydrolysis of hydroyzable titanium salt solution. No. 409,549. Peter Tillman and Friedrich Raspe.

Process for the preparation of hydrate titanium oxide sol by peptizing in water hydrated titanium oxide which is free from polyvalent ions by means of a peptizing agent the anion of which is univalent, and diluting the peptized solution thus obtained with sufficient water to obtain a sol containing between about 5 grams and about 50 grams titanium, calculated as TiO_2, per litre. No. 409,550. Peter Tillman, Friederich Raspe and Joseph Heinen.

Granted and Published December 29, 1942.

Synthetic magnesium oxide clinker made from crystalline magnesium hydroxide and consisting of ultimate particles 30 to 70 microns in length and agglomerated to form needle-like fragments over 1 mm. in length. No. 409,564. Heinz Henry Chesney.

Process for briquetting aluminum and aluminum alloy scrap which comprises heating the scrap to a temperature between 250°C and substantially below the melting point of the lowest melting metal contained in the scrap, and then compressing the heated scrap into compact bodies. No. 409,589. Max Stern.

Apparatus for producing protective gaseous atmosphere. No. 409,613. Canadian General Electric Company Limited. (Harry E. Lewis).

Copoolymer of methyl methacrylate and glycerol trimethacrylate. No. 409,614. Canadian Industries Limited. (Samuel S. Kistler and Carl E. Barnes).

Copolymer of methyl methacrylate and a substance selected from the group consisting of acrylic acid and the alpha substituted acrylic acids. No. 409,615. Canadian Industries Limited. (Samuel S. Kistler and Carl E. Barnes).

Copolymer of an allyl ester of an acid selected from the group consisting of acrylic acid and its alpha substitution products with a monohydric alcohol ester of an acid of the same group. No. 409,616. Canadian Industries Limited. (Samuel S. Kistler and Carl E. Barnes).

Polymerizable monomeric unsaturated methylene compound. No. 409,617. Canadian Industries Limited. (Carl E. Barnes).

Absorbent paper sheet containing high alpha cellulose sulfite pulp and 1-10% of the resinous water-soluble reaction product of a polyhydric alcohol and boric acid. No. 409,619. Canadian Kodak Company Ltd. (Kenneth J. MacKenzie and Robert S. Bryce).

Process for the treatment of harsh vegetable fibers to convert them into soft spinnable fibers. No. 409,637. Celec Corporation. (Charles S. Townsend).

Process for treating fibers derived from vegetable growth material. No. 409,638. Certain-Teed Products Corporation. (Alfred F. Ernest).

Treating sliced potatoes to avoid discoloration and a burnt taste when fried by soaking them in a dilute acid solution having an acid concentration of from 0.1 to 0.7 percent for a period of from 5 minutes to 5 hours. No. 409,641. Continental Can Company, Inc. (Keith T. Swartz).

Developing a photographic element bearing an emulsion layer containing a reducible silver halide image with an aromatic primary amino developing agent in the presence of ethyl picolinoyl acetate as a color former. No. 409,644. E. I. du Pont de Nemours & Co., Inc. (Edmund B. Middleton and Andrew B. Jennings).

Color-forming photographic emulsion comprising a light-sensitive silver halide and an abietyl ether of resorcinol having a reactive position in a position taken from the group consisting of ortho and para to a hydroxyl group. No. 409,645. E. I. du Pont de Nemours & Co., Inc. (Lynn Barratt).

Photographic developer solution containing an aromatic amino developing agent containing an unsubstituted amino group and an alkylidene bis-acylacetic acid ester wherein the alkylidene radical is attached to the carbon atoms between the keto groups of the acylacetic acid ester nuclei. No. 409,646. E. I. du Pont de Nemours & Co., Inc. (Andrew B. Jennings).

Photographic element having at least one emulsion layer containing a light sensitive silver salt and N-acetoacet-N'furoylacet-benzidine. No. 409,647. E. I. du Pont de Nemours & Co., Inc. (Andrew B. Jennings and Edmund B. Middleton).

Reducing bath comprising an aqueous solution containing as the sole type of reducing agent at least one aromatic amino developing agent having at least one unsubsituted amino group and a nitrogenous base free from negative groups and hydroxyl groups attached to carbon in an amount sufficient to change the characteristics of the solution so that it no longer distinguishes between exposed and unexposed silver salts, said amount being within the range from 8cc to 30g per litre of solution. No. 409,648. E. I. du Pont de Nemours & Co., Inc. (Emery Meschter).

Photographic reversal process comprising developing a photographic element containing a latent image in an ordinary developer to produce a negative image and developing the reversed image in the presence of a color former with an aqueous reducing bath containing as the sole reducing agent at least one aromatic polyamino developing agent and a nitrogenous base free from negative groups and hydroxyl groups attached to carbon. No. 409,649. E. I. du Pont de Nemours & Co., Inc. (Emery Meschter).

Leaf assembly having the edges of the leaves united by adhesive including as a base reclaimed rubber and resins with suitable solvents. No. 409,651. Erie Foundry Company. (Jesse O. Small and Logan F. Zahniser).

Transparent ice formed of water containing hydrochloric acid in an amount to impart non-cracking characteristics to said ice. No. 409,653. Fisheries Research Board of Canada. (Robert H. Bedford).

Frozen comentibles having a transparent ice glaze formed of an aqueous solution of hydrogen peroxide in an amount sufficient to impart non-cracking characteristics to said glaze. No. 409,654. Fisheries Research Board of Canada. (Robert H. Bedford).

Frozen flesh food having an ice glaze formed of water containing benzoic acid in an amount to impart non-cracking characteristics to said ice. No. 409,655. Fisheries Research Board of Canada. (Robert H. Bedford).

Apparatus for conveying pulvurulent material of variable density. No. 409,656. Fuller Company. (Joseph H. Morrow).

Ennobling of textile materials by applying to it an asymmetric fatty acid anhydride containing long acyl radical of at least 10 carbon atoms and a considerably shorter acyl radical capable of being split off upon heating, and heating to split it off and to cause a reaction of the textile material with the remainder of said anhydride. No. 409,660. Heberlein Patent Corporation. (Walther Kaase and Ernst Waltmann).

Ennobling of textile materials by impregnating them with an aliphatic aldehyde having at least 10 carbon atoms and heating the impregnated material to produce a surface etherification in order to strengthen the material and increase its water repellence. No. 409,661. Heberlein Patent Corporation. (Walther Kaase and Ernst Waltmann).

Ennobling of textile materials by heating with an unsymmetric fatty-acid carbonic-acid ester anhydride, the fatty acid radical having at least ten carbon atoms and the carbonic acid ester having at least 2 carbon atoms to volatilize the carbonic acid radical having the lower number of carbon atoms, and to increase the water repellence of said textile material. No. 409,662. Heberlein Patent Corporation. (Walther Kaase and Ernst Waltmann).

Ennobling textile material by treating with a dialdehyde combined through one aldehyde group with an aliphatic acid amide, said aliphatic acid amide having at least 10 carbon atoms in a straight chain, and heating the so treated textile material to increase its water repellence. No. 409,663. Heberlein Patent Corporation. (Hans Beck).

Ennobling textile material by reacting said material with stearyl isocyanate at a temperature of about 150°C for about 5 minutes to increase its water repellence. No. 409,664. Heberlein Patent Corporation. (Ernst Waltmann and Edgar Wolf).

Ennobling textile material by treatment with a water soluble quaternary pyridinium salt and is then heated to about 80-100°C for about 2 hours to increase the water repellence of the textile material and to drive off the free pyridine produced. No. 409,665. Heberlein Patent Corporation. (Ernst Waltmann).

Isocyanate having the formula: Alkyl.CO.O.Ar.N=C=O, the alkyl radical having at least 10 carbon atoms and Ar being a residue of the benzene series. No. 409,666. Heberlein Patent Corporation. (Walter Kaase and Ernst Waltmann).

Insecticide composition including lead arsenate, a small quantity of an electrolyte and a stabilizing amount of a protective colloid. No. 409,668. Hercules Glue Company, Ltd. (Clarence D. Dolman).

Process for the production of blister-free nickel strip directly from cathode nickel. No. 409,671. The International Nickel Company of Canada Limited. (Mortimer P. Buck).

Brewing beer by a process comprising treating yeast in a colloid mill in the presence of a plasmolyzing agent to extract at least a portion of the yeast-cell contents without disruption of a substantial quantity of the yeast cells and without substantial autolysis of the yeast, and adding at least a portion of the treated material to the beer. No. 409,681. Rotary Extractor Corporation. (Albert M. Fischer).

Manufacture of paper comprising the step of adding to the pulp 0.25-1.0% of an emulsifiable oil where there is a very high water concentration and a low cellulose concentration. No. 409,685. Standard Oil Development Company. (Leslie W. Hutchins).

Production of crepe effects on fabrics containing highly twisted yarns at least some of which contain organic derivatives of cellulose. No. 409,703. Camille Dreyfus.

Furnace for the discontinuous manufacture and treatment of glass in which the period of introduction of the material into the furnace is distinct from that of the extraction of the finished material. No. 409,711. Société Anonyme des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny & Cirey. (Edouard V. Borel).

Granted and Published January 5, 1943.

Syphon attachment for a bottle for the separation of liquid such as cream from milk. No. 409,731. Arnold Dezail McArthur.

Improved wood stave conduit adapted for the flow of liquids. No. 409,734. Cyril L. Meyers.

Hemostatic for administration hypodermically, comprising a solution containing as its active principle at least one compound selected from the group consisting of solutions of dicarboxylic acids of the general formula $C_nH_{2n-2}O_4$ where n equals 2 to 14, pyvuric acid, mesotartaric acid, citric acid, cinnamic acid, glutamic acid, glycollic acid, glyoxylic acid, the salts of said acids and the lower alkyl esters of said acids. No. 409,743. Arthur Steinberg.

Coating machine for applying adhesive in fluid form to web material. No. 409,751. American Can Company. (John H. Murch, Elof Nordstrom and Ronald E. J. Nordquist).

Production of dicyandiamide condensation product adapted for use in the treatment of textiles. No. 409,754. American Cyanamid Company. (Kurt Ripper).

Therapeutic composition for oral administration comprising a sulfonamide compound having therapeutic properties and a therapeutically inactive glyceride in which the ratio of glyceride to the sulfonamide compound is at least 20:1. No. 409,755. American Cyanamid Company. (David R. Climenko).

Producing dicyandiamide condensation product by reacting a mixture containing dicyandiamide and melamine with an aldehyde, the melamine being present in a minor proportion as compared with the dicyandiamide. No. 409,756. American Cyanamid Company. (Kurt E. Ripper).

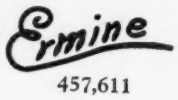
Preparing relatively stable intermediate reaction products capable of dilution with water by reacting dicyandiamide and melamine with an aldehyde under alkaline conditions by heating at a temperature below boiling until there is formed a low-reacted substantially non-hydrophobe reaction product which is of a creamy nature at room temperature. No. 409,757. American Cyanamid Company. (Kurt E. Ripper).

Additional patents granted and published Jan 5, 1943, will be given next month.

401,294

454,028

SULFEDEX
457,569

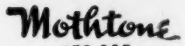


457,611

458,633

458,972

Mothcium
459,226



459,227

401,398

BLUCOLITE
455,046

LANAFIN
455,485

ALUMINOID
COLLOIDAL ALUMINA
457,675

AIRLINE
458,654

458,753

PRESERVATEX
458,978

RAYO-SEAL
458,983

ORAMINE
459,275

PARENAMINE
459,277

BURROUGHS WELLCOME & CO. (U.S.A.) Inc.
456,303

LIFE-O-MATIC
457,864

RIGORTEX
458,071

DRAX
458,811

NUROZ
459,127

E-JECT-O
459,446

401,487

CELAPOK
457,166

AGRIBOR
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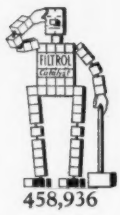
SOFENATE
459,150

HARCOPEL
459,455

AIRCRAFT SUPER- CHEMACOL
401,489

457,215

458,312



458,936

SAY-LAC
459,170

HYDROMITE
459,464

RUBBERCOTE
401,491

SOL-SPEEDI-DRI
457,456

ZINAR
458,544

SORBETTA
459,171

Staleymone
459,500

LEXOL
453,149

STELLON
457,489

KIN
458,609

STRATOSEAL
458,948

SPARGO
459,193

KLEENORITE
459,730

Trade Mark Descriptions†

401,294. Ohio Ferro-Alloys Corp., Canton, Ohio; Jan. 5, 1942; Ser. No. 499,999; for ferro-alloys; since Nov. 21, 1941.

401,398. Atlantic Refining Co., Philadelphia, Pa; Nov. 25, 1941; Ser. No. 448,894; for lubricating oils; since Nov. 25, 1937.

401,487. J. W. Mortell Co., Kankakee, Ill.; Feb. 28, 1942; Ser. No. 451,315; for adhesive plastic compound; since Jan. 15, 1942.

401,489. Chemical Products Co., Mineola, N. Y.; Apr. 7, 1942; Ser. No. 452,186; for chemical for removing foreign substances; since Mar. 25, 1942.

401,491. Andrew Brown Co., Los Angeles, Calif.; June 2, 1942; Ser. No. 453,408; for lacquer coating; since Mar. 20, 1942.

453,149. American Lecithin Co., Cleveland, Ohio; May 21, 1942; for lecithin products; since Dec. 12, 1941.

454,028. Carbsil Pigment Co., Franklin, Tenn.; July 3, 1942; for carbon-silicates; since May 29, 1942.

455,046. Clyde D. Chapman, doing business as Blucolite Co., Spokane, Wash.; Aug. 22, 1942; for liquid cleaning, glazing, and polishing material; since Mar. 1, 1941.

455,485. Standard Chemical Products, Inc., Hoboken, N. J.; Sept. 11, 1942; for chemical preparation in paste and liquid form used for finishing textiles; since March, 1926.

456,303. Burroughs Wellcome & Co. (U.S.A.) Inc., N. Y.; Oct. 21, 1942. Under 10-year proviso; for chemical compounds; since 1884.

457,166. Celanese Corp. of America, N. Y.; Dec. 2, 1943; for staple fibers of cellulose derivatives; since Nov. 27, 1942.

457,215. United States Rubber Co., N. Y.; Dec. 4, 1942; for chemicals for use as fungicides; since Nov. 13, 1942.

457,456. Charles M. Addis, doing business as Refiners Lubricating Co., N. Y.; Dec. 17, 1942; for cleaning material; since Sept. 28, 1942.

457,489. The Amalgamated Dental Co. Ltd., London, England; Dec. 18, 1942; for synthetic resin plastics; since Oct. 1, 1942.

457,569. Abbott Labs., North Chicago, Ill.; Dec. 23, 1942; for antiseptic preparation; since Nov. 27, 1942.

457,611. The Nu-Di Products Co., Cleveland, Ohio; Dec. 26, 1942; for liquid cleaner, polishes, and a dye, and dressing preparation for suede, fabric and leather articles—namely, for shoes, and heel and edge trim for shoes; since Dec. 1, 1934.

457,675. Chatham Pharmaceuticals, Inc., Newark, N. J.; Dec. 31, 1942; for colloidal aluminum hydroxide; since May 14, 1940.

457,864. V. H. Rowlett, doing business as Battery Life-O-Matic Products, Kansas City, Mo.; Jan. 11, 1943; for chemicals for treating batteries; since Oct. 15, 1942.

458,071. Inertol Co., Inc., Newark, N. J.; Jan. 21, 1943; for waterproofing and protective paint; since Jan. 7, 1943.

458,312. Corn Products Refining Co., New York, N. Y.; Feb. 3, 1943; for extract from corn gluten for plastics; since May 13, 1942.

458,544. Newport Industries, Inc., Pensacola, Fla.; Feb. 15, 1943; for solid zinc-treated rosin; since Nov. 21, 1940.

458,609. Emergency Products, Ltd., London, England; Feb. 18, 1943; for chemical combination in tablet form for use as a fuel; since Nov. 25, 1942.

458,633. Macalaster Bicknell Co., Cambridge, Mass.; Feb. 19, 1943; for scientific glassware; since Dec. 14, 1942.

458,654. The Hilliard Corp., Elmira, N. Y.; Feb. 20, 1943; for filtering apparatus; since Apr. 7, 1942.

458,753. Di-Noc-Cramer Corp., Cleveland, Ohio; Feb. 25, 1943; for metallic sheets having a light sensitive coating; since Nov. 24, 1942.

458,811. S. C. Johnson & Son, Inc., Racine, Wis.; Feb. 27, 1943; for aqueous and nonaqueous wax emulsions; since Sept. 16, 1942.

458,830. American Potash & Chemical Corp., N. Y.; Mar. 1, 1943; for borax used in fertilizer and weed control preparations; since Aug. 28, 1942.

458,936. Filtrol Corp., Los Angeles, Calif.; Mar. 6, 1943; for chemically-treated montmorillonite clay, adapted for use as an adsorbent; since Feb. 7, 1943.

458,948. Pittsburgh Plate Glass Co., Pittsburgh, Pa.; Mar. 6, 1943; for zinc chromate compound; since Dec. 30, 1942.

458,972. Phillips Petroleum Co., Bartlesville, Okla.; Mar. 8, 1943; for gasoline; since Feb. 19, 1943.

458,978. A. F. Van Wodf doing business as Kedmont Mfg. & Waterproofing Co., Chicago, Ill.; Mar. 8, 1943; for materials; since Feb. 8, 1926.

458,983. The Goodyear Tire & Rubber Co., Akron, Ohio; Mar. 9, 1943; for vulcanizing cement; since May, 1939.

459,127. Newport Industries, Inc., Pensacola, Fla.; Mar. 15, 1943; for polymerized or partially polymerized rosin; since Nov. 15, 1938.

459,150. Dr. Hess & Clark, Inc. Ashland, Ohio; Mar. 16, 1943; for disinfectant; since Feb. 24, 1943.

459,170-1. Ernest D. Fear, Kansas City, Mo.; Mar. 17, 1943; for mixture and in processing of milk and ice cream; since Mar. 3, 1943.

459,193. Cunningham Chemical Labs., Inc., N. Y.; Mar. 18, 1943; for fire-extinguishing compound; since November, 1942.

459,226-7. The Mothone Co., Needham, Mass., Mar. 19, 1943; for moth-proofing materials to be used in paints; since Mar. 13, 1943.

459,275,459,277. Frederick Stearns & Co., Detroit Mich.; Mar. 22, 1943; for nutritive substance composed largely of amino acids; since Mar. 13, 1943.

459,446. United Gilsonite Labs., Scranton, Pa.; Mar. 27, 1943; for chemical drain pipe solvent; since June 1, 1933.

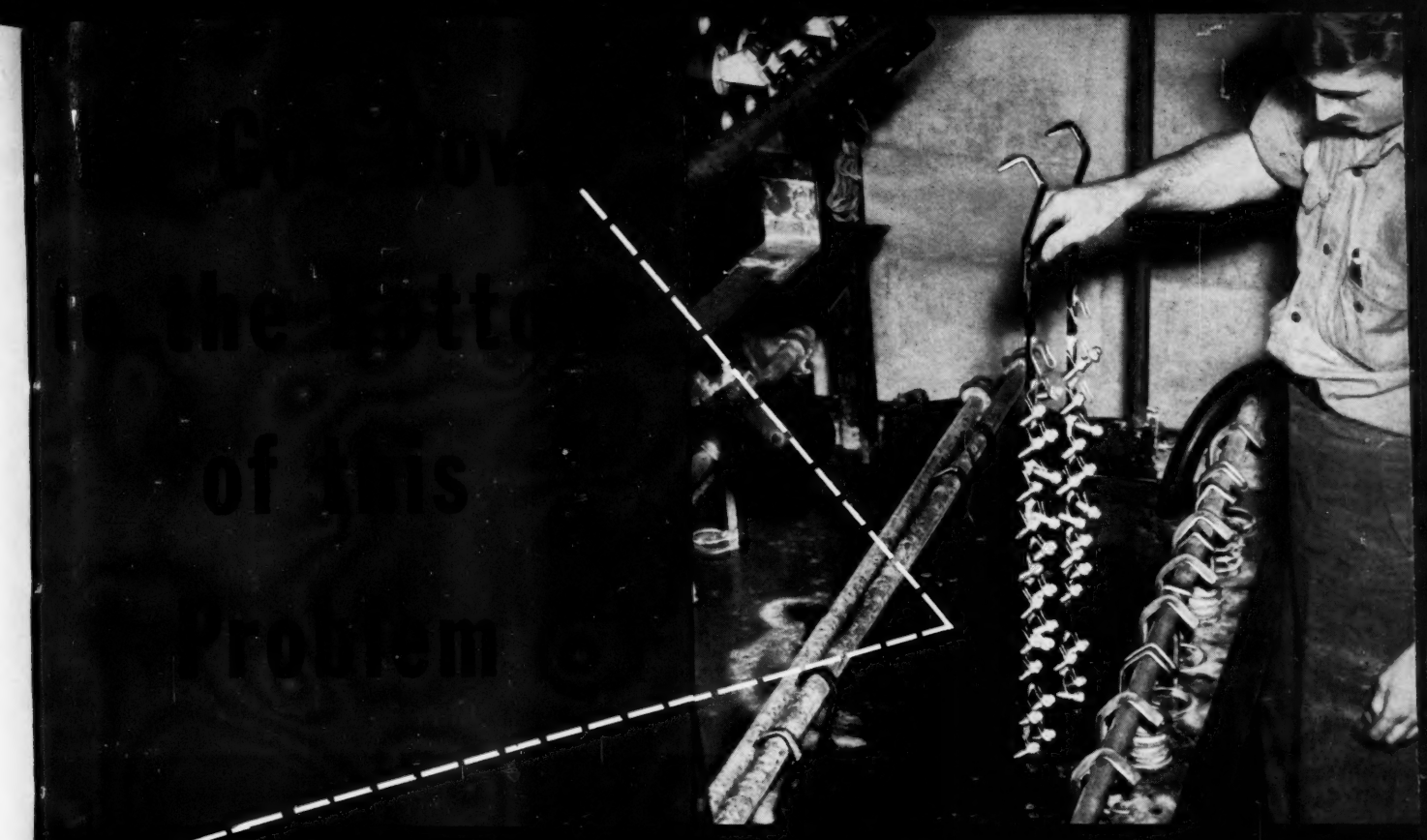
459,455. Warwick Chemical Co., West Warwick, R. I.; Mar. 27, 1943; for water repellent compounds; since Jan. 17, 1942.

459,464. Filmite Oil Corp., Milwaukee, Wis.; Mar. 29, 1943; for cutting lubricants; since Jan. 22, 1943.

459,500. A. E. Staley Mfg. Co., Decatur, Ill.; Mar. 29, 1943; for plant growth promoting substances; since Jan. 27, 1943.

459,730. Davidson Manufacturing Corp., Chicago, Ill.; Apr. 9, 1943; for counter etch used in removing oxides; since Nov. 20, 1940.

† Trademarks reproduced and described include those appearing in the Official Gazette of the U. S. Patent Office, May 4, to May 25, 1943.



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The Baker & Adamson organization is *regularly* helping manufacturers with such problems and *relieving them of unnecessary chemical manufacturing responsibility.* Write or phone us today. We will work with you directly throughout—and *confidential problems will be handled in the strictest confidence. No obligation, of course!*

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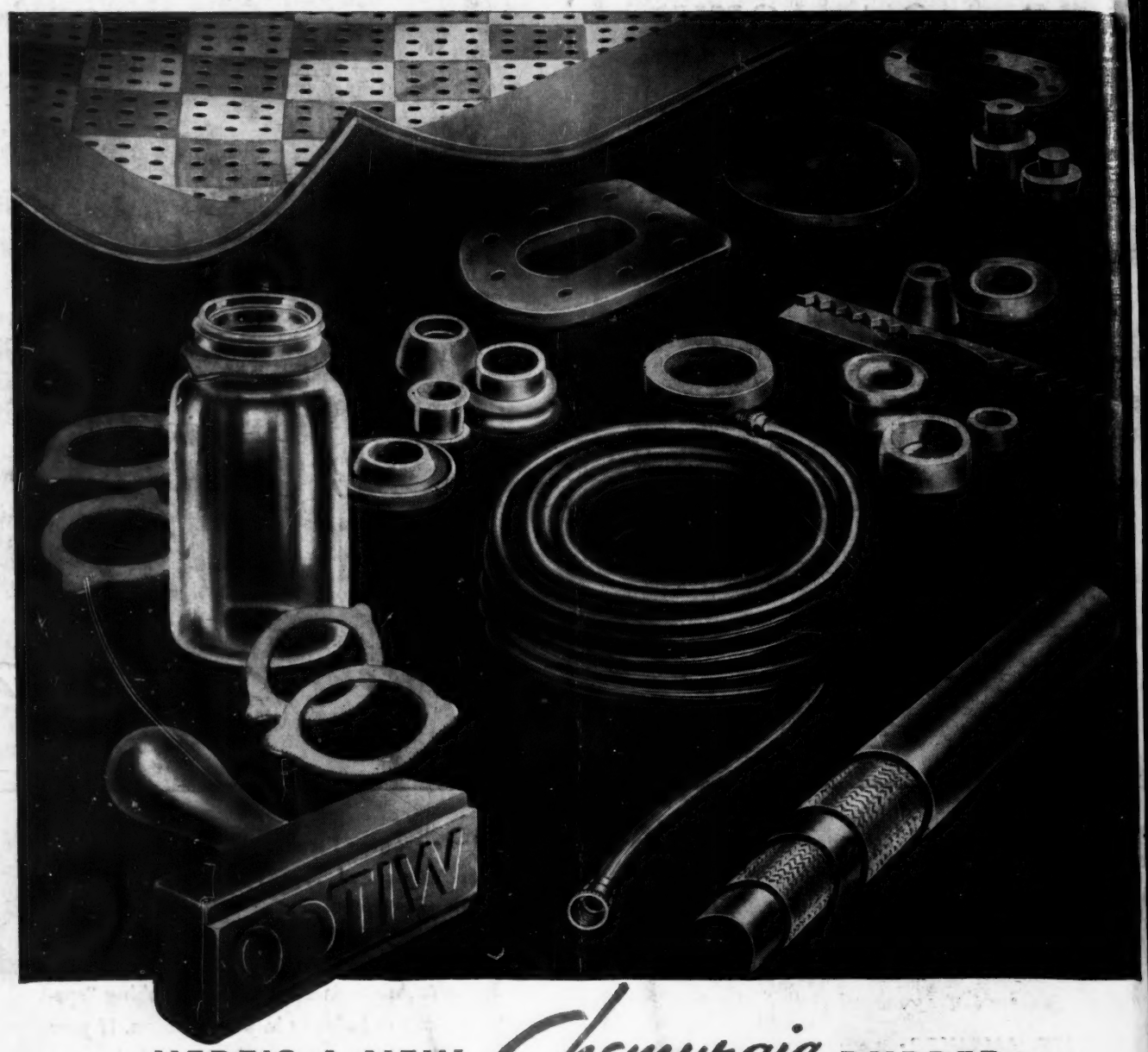

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A new type of chemurgic rubber—Witcogum—is ready for your use now in replacing rubber and reclaim in a long list of applications. Its broadest field is in products where service requirements are moderate... hose and tubing, brake linings, gaskets, hospital sheeting, for example.

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Witcogum was designed primarily for use alone, to release rubber, reclaim, and synthetic for more vital applications. But it is equally successful in blends with these other elastomers, serving as an extender or improving their processing.

Witcogum's commercial success has been unusually rapid—for behind its introduction lay months of experimental work in our Witco Research Laboratories. Exhaustive tests have demonstrated its adaptability as a rubber replacement or extender... tests you can easily confirm in your own production. Just indicate the purpose for which you plan to use Witcogum—we'll be glad to send you working samples.

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